EFFECT OF PASSIVE CLASSROOM LISTENING ON STUDENTS' PREFERENCES TOWARD CLASSICAL/CONCERT MUSIC

By

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Robert S. Custer

This project is dedicated to my immediate as well as extended family. In addition it is dedicated to my many wonderful students I have had the privilege of mentoring and motivating.

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By

Robert S. Custer

December 2003

Chairperson: Dr. Charles Hoffer
Major Department: School of Music

This study examined the effects of passive/background music listening on the preference level of 661 fifth- and sixth-grade students toward various musical examples. The experimental group (n=354) and the control group (n=307) were arranged by convenience as 37 pre-existing in-class groups: 17 control and 20 experimental. Using a seven-point Likert-type scale, the students responded to twelve musical examples: six classical/concert examples and six contemporary popular pieces. Each example was approximately 35 seconds with a period of silence between selections.

The experimental treatment consisted of selections of music recorded on four CDs. These examples were similar in style to the pre/post-test examples, but did not include those specific pieces. The treatment period lasted 16 weeks. At the conclusion of the study, all experimental-group instructors completed a 24-question project survey. Using SPSS Version 10 software, various repeated-measure split-plot ANOVAs, t-tests, and cross correlations were used for statistical measurement. The researcher interviewed the four experimental-group instructors whose classes reflected the most gain and those four whose classes reflected the least gain.

Results showed that there was no significant difference in the main effect between the experimental group and the control group suggesting that under these research conditions, it is only speculative that background/passive music caused whatever changes were reflected. One hundred ninety-nine of the experimental group shifted in the negative direction in the post-test. Explanation for this phenomenon may include the effects of the 9-11 tragedy, negative family pressure brought on by a failing economy, or negative attitudes toward school encouraged by the impending FCAT tests.

The study's second component is a qualitative examination of the data compared with the survey results and personal interviews with teachers. Seven groups scored a positive preference shift and reflected the following common conditions: (1) A positive and respectful relationship between teacher and students; (2) A happy, energetic instructor who interacted well with the students; (3) A comfortable, quiet, and well-organized room; (4) An instructor who applied cooperative learning skills gained through experiencing Kagan training.

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CHAPTER 1
INTRODUCTION

Presently both adults and children are exposed daily to an enormous amount of music from every direction in our environment. Most music is heard passively while they are involved in some other activity. While working, shopping, being entertained, or doing routine business, they hear this music whether they choose to or not. What measurable effect does this type of exposure have on their musical preference or level of musical liking toward what they heard?

Until now most studies have involved subject unawareness (subliminal), laboratory conditions, visual or linguistic stimuli, undergraduate university students, and small numbers. Only few studies involve aural stimuli, and in those cases the stimuli are usually of nonmusical nature (Bornstein 1989).

This study tested the effects of passive (mere exposure but audibly perceptible) listening under natural classroom conditions using intact classes of fifth-grade and sixth-grade students. It further explored the conditions for the preference shifts that occurred, and described various interactions among the changes and the students, classes, and schools involved.

Need for Study

The importance of music in the general education curriculum is being questioned. If a program of passive listening to musical stimuli under natural (not laboratory) conditions could cause a positive change in attitude toward the music, then this approach would be a valuable tool for the music educator. If passive exposure to music can be shown to create a positive change toward musical liking, then perhaps this study may also help to generate a greater musical involvement by the general classroom teacher, a greater sense of confidence regarding the use of musical materials, and a stronger acceptance of music education by the general academic community. Just as appropriate background music holds great importance for the advertising industry, it is possible that carefully selected background music in the classroom could also help to serve the needs of music education.

In most school districts, music classes meet once or twice per week for a total of about 40 minutes. Much time is spent on musical performance, leaving little time for nonperformance activities such as music listening. In addition, some school districts have severely reduced music class time due to increased core-curriculum demands. Yet, they maintained past curricular expectations for the music program. This results in high instructor frustration and ultimately results in music teacher burnout (Bresler 1993). Other school districts have eliminated their music programs because of budget restraints and lack of motivation to solve their financial crises in other ways. These situations only increase the importance of discovering additional ways of educating students in music within the school setting (but not necessarily within the formal music program). Is it possible that exposing students to a planned program of passive listening beyond the bounds of the formal music class could affect their musical preferences? At this time we have little solid evidence that passive listening affects student musical attitudes.

Research specifically in the area of musical preference and mere exposure is extremely limited. The seminal research by Robert Zajonc (1968) regarding the mere exposure effect inspired studies that challenged or supported this phenomenon

(Bornstein 1989). However, Bornstein's Meta-analysis reflected that most studies involved visual or grammatical stimuli, university-age research participants, laboratory environment, thoroughly random selection, short intervention time period, and primarily below-conscious level (subliminal) awareness. Our study tested the mere exposure effect involving musical stimuli, grade school and middle school students, a natural classroom environment, a fairly long (16 week) experimental treatment period, and just-barely-above-conscious level (supraliminal) awareness.

Effectiveness of passive musical listening as a tool for establishing or altering musical preferences of fifth graders and sixth graders is an important concern. If our research indicates that a planned program of passive listening can influence a change in musical preference, then this mode of listening could offer further opportunity for the overall educational community to enhance the music education of our students.

Purpose

The primary purpose of this research was to determine whether passive listening (supraliminal mere exposure) to music would cause an a change in musical preferences of fifth grade elementary and sixth grade middle school students. The main goal of this research was to investigate a method of imparting concert music to students in an informal manner, avoiding the effects of peer pressure, prototypicality, acculturation, or socially evolved musical tastes. This research also briefly addressed general issues relating to the concepts of mere exposure and implicit learning: That is, gaining knowledge of abstract yet complex stimuli that are independent of conscious awareness of what was subsequently learned (explicit learning).

Statement of the Problem

This study investigated the extent to which passive listening effected a change in the level of liking by fifth grade elementary and sixth grade middle school students toward a particular musical style. Several studies have indicated that a program of active directed listening, coupled with repetition generally causes a positive change in liking toward some particular stimulus. (Bornstein 1987; Finnas 1989b; Hargreaves 1984; Hargreaves & Castell 1986; Hargreaves et al. 1995; Meyer 1956; Peery & Peery 1986). Would a method using the passive mode of listening under natural classroom conditions result in similar changes?

Specifically this study sought the answers to the following research questions:

1. To what degree does a program of passive listening affect the musical preferences of fifth grade and sixth grade students? What is their direction of change? What is the difference in score between each grade level? Within each grade level are there unique subgroups that demonstrate a significant change of preference score?

2. Within the experimental group itself, to what degree and direction did this group alter their preferences? What subgroups, if any, demonstrate significant changes in their musical preference scores?

3. How did the response rate toward the treatment examples (concert music style) compare with the distractors (popular musical styles)? What is the nature of the responses to each of the listening examples: How does the experimental group compare to the control group in this regard?

4. Are there any identifiable personal or demographic characteristics of the experimental group students who demonstrated a positive gain on the pre-test/post-test?

5. What are the attributes of the four highest-scoring experimental groups? What are the personal or classroom characteristics of the teachers of those groups?

Limitations

1. The sample involves intact groups randomly selected as the experimental groups.

2. The characteristics of each individual and/or family as determined in the pre-test may have changed over the duration of the study. These static descriptions limit the study by representing only a short period of time.

3. Both the selected listening music and the listening test music represent only a small sample of all the appropriate music available. A different test using different materials of similar style might have produced a different result.

4. There is little control over what the music teachers taught over the duration of the study.

5. There is no control over what the students listened to outside of school.

Delimitations

1. This study was restricted to fifth grade and sixth grade students only.

2. The subjects for the study were selected from typical school populations from Polk County, Florida.

3. The experimental treatment was limited to 16 weeks.

Null Hypotheses

The following Null-Hypotheses were tested:

NH 1.0: The experimental group and the control group do not vary significantly in the change of musical preference scores from the pre-test to the post-test.

- **NH 1.1:** With regards to gender.
- **NH 1.2:** With regards to musical experience.
- **NH 1.3:** With regards to economic indicator.
- **NH 1.4:** With regards to ethnicity.

NH 2.0: Within the experimental group, musical preference scores do not change significantly from the pre-test to the post-test.

- **NH 2.1:** With regards to gender.
- **NH 2.2:** With regards to musical experience.
- **NH 2.3:** With regards to economic indicator.
- **NH 2.4:** With regards to ethnicity.

NH 3.0: The fifth grade and sixth grade experimental groups do not vary significantly in change of musical preference scores from the pre-test to the post-test.

- **NH 3.1:** With regards to gender.
- **NH 3.2:** With regards to musical experience.
- **NH 3.3:** With regards to economic indicator.
- **NH 3.4:** With regards to ethnicity

Statistical Analysis and Method

SPSS statistical software was used to accomplish the statistical tests. A split-plot analysis of variance (ANOVA), a paired t-test, or a combination of both was used to test the null hypotheses. Cross tabulations were used to show population characteristics, variability, and homogeneity among groups.

Definitions

1. **Active listening**. Listening with focus. Directed listening. Listening with preceding instructions.
2. **Associative learning**. Learning about associations between events. It permits an organism to conceptualize, predict, and control events through causal and structural knowledge (Shanks & St. John 1996).
3. **Attitude**. Connotes a predisposition toward cognitive or psychomotor activity (either negatively or positively). It exists within a social, or psychological event or phenomenon (Radocy & Boyle 1988).
4. **Acculturation**. Increased familiarity with a musical culture (North & Hargreaves 1996).
5. **Causal knowledge**. Knowledge as events that relate to each other such as actions and their consequences: a pair of associated events (Shanks 1995).
6. **Classical music**. All art or concert music.
7. **Classic style music**. Music of the 18th Century. Typically sons of J. S. Bach, Mozart, Haydn, Beethoven.
8. **Cognitive dissonance.** The difference in affective valence between the attitudes we hold and the behaviors we demonstrate. It is the inner feeling we experience when things are not quite right. The greater the difference in affective valence, the greater the cognitive dissonance.

9. **Implicit learning (IL).** The learning of complex nontargeted information in an incidental manner, without awareness of all that has been learned. It can require a minimal amount of attention. Subjects will not be able to verbalize what was learned, but their behaviors indicate that they did learn something beyond the targeted information (Reber 1969). Three Conditions: (1) Explicit perception (not subliminal, just incidental); (2) Facts learned are not expressed to begin with; (3) Recall whether inadvertently or with intent (observed behavior indicates change, learning). Acquisition of knowledge independent of conscious attempts to learn and largely in the absence of explicit knowledge about what was acquired. In terms of encoding and retrieval, the generally accepted concept is that the encoding of information is implicit and the retrieval is either explicit or implicit, usually explicit. Certainly, the encoding and the retrieval are NOT both explicit. The exact definition of implicit learning depends on the researcher's concepts. We do not fully understood why or how IL happens, but only that it does.

10. **Implicit memory (IM).** This differs from implicit learning by the nature of retrieval. IL implies implicit encoding of stimulus and explicit retrieval (on command); whereas IM implies implicit retrieval, implicit access to past information, an unconscious form of memory (Stadler & Frensch 1998). the exact definition is unclear and must be clarified by each researcher. Examples of IM include unintentional plagiarism (song-lifting) and certain untaught motor skills in athletics and in musical performance.

11. **Learning**. An observable change in behavior due to experience not attributable to anything else such as normal maturation. There must be observable evidence to conclude that learning has taken place (Radocy & Boyle 1988).

12. **Mere exposure effect (MEE)**. Term coined by Zajonc (1968). The increase of positive affect toward a specific stimulus that results from repeated repetition of the same but new (at the time) stimulus. There are three potential explanations for the phenomenon: (1) Primacy of affect; (2) Nonspecific activation; and (3) Perceptual fluency. The original concept involved subliminal (below-conscious threshhold) stimuli (visual and grammatical). Present research includes supraliminal stimuli.

13. **Mozart effect.** The effect of listening to music of Mozart on increasing our special-temporal reasoning ability (Rauscher et al.1993). The results are debatable.

14. **Musical liking.** A level of enjoyment derived from hearing a piece of music.

15. **Musical preference**. An act of making a musical choice. It is an overt behavior as opposed to musical taste, which is covert. It is considered short-term.

16. **Musical taste**. A long-term covert predisposition toward musical quality. It Involves agreement with the experts, an element of connoisseurship (Radocy & Boyle 1988).

17. **Natural conditions**. Nonlaboratory conditions (classroom, public area).

18. **Nonspecific activation.** One of three competing hypothesis explaining the unconscious MEE. It maintains that the Subliminal MEE is a purely cognitive expression that involves nonspecific activation of mental representation of a single memory system. This hypotheses affirms that the nonconscious MEE is a result of information processing.

19. **Passive Listening**. Listening without focus on what you are hearing. Listening while focusing on something else. Listening without a directed purpose for listening.

20. **Perceptual Fluency**. One of three competing hypothesis explaining the below-conscious MEE. It maintains that the MEE is a result of cognition (specifically, implicit memory). Perceptual fluency refers to the ease of processing of information acquired subconsciously by repeated exposures to a specific stimulus. This eventually influences liking (Reber 1989).

21. **Primacy of Affect.** One of three competing hypotheses explaining the unconscious mere-exposure effect. This hypothesis suggests that mental and emotional processes are independent of each other: Affect and cognition are partially independent mental subsystems. This also subsumes that the affective expression is most important and that cognition has no bearing on MEE.

22. **Priming.** Unless in a manipulated context, an unintentional or unrequested prior exposure to some unrelated information in another decision context that increases the speed or accuracy of a decision that ultimately occurs regarding the unrelated information. It is assumed to be an involuntary and below-conscious phenomenon. It is described as an automatic process. It tends to occur without awareness and is described as an unconscious process . It is to implicit memory what episodic memory (intentional) is to explicit memory. Two types: conceptual and perceptual. Both are types of implicit memory (Schacter 1987). Sometimes perceptual priming is contaminated by explicit memory (conscious recollection of something that was performed in the past).

23. **Prototypicality**. A level of propriety for a given condition, such as singing Christmas carols in July (low prototypicality) or Amazing Grace at a funeral (high prototypicality).

24. **Structural knowledge**. Knowledge that is categorical. The relationship between sight and sound is categorical and thus structural (no relation between except as a category) (Shanks & St. John 1996).

25. **Subliminal awareness**. Below consciousness awareness (subconscious, unconscious).

26. **Supraliminal awareness**. Conscious awareness of stimuli.

27. **Valence.** The positiveness or negativeness assigned to an attitude or issue. For example, war or sadness is negative; whereas, peace or happiness is positive.

Summary

This experiment was designed to study the extent to which fifth-grade and sixth-grade students' musical preferences could be altered by passive listening to various musical examples. Five research questions and three null hypotheses were presented for testing using the split-plot ANOVAs, t-tests, and various cross-tabulations. The initial motivation for this study arose from the fact that many school systems were diminishing the amount of time allocated to music education, thus creating a need to examine alternative methods of music teaching and learning.

CHAPTER 2
REVIEW OF LITERATURE

Introduction

A review of relevant research is organized as follows: First is an historical overview of pertinent music research. Next is the nature and characteristics of music preference and music preference modification. The third section involves research concerning passive listening, background music, suggestology, and mere exposure. Last are studies relative to implicit memory, implicit learning, perceptual fluency, and priming as these concepts relate to the present study.

Historical Overview

Research in musical preferences has a long history. Fechner (1876) and James (1890) studied the effects of repeated exposure to musical stimuli as it affected familiarity. Meyer (1903) did likewise using quarter-tone music as a stimulus and arrived at similar conclusions: repetition does affect familiarity, which in turn creates a positive effect on liking. The application of this hypothesis has involved visual stimuli (Pierce & Jastrow 1884; and Sidis 1898; both cited in Bornstein and Pittman 1992); radio music plugging (play lists) and sheet music sales (Wiebe 1940, and Sawyer 1981); popularity of songs on the 'Hit Parade' (Jakobovits 1966). Subsequently, Finnas (1986) sites many studies since the turn of the twentieth century relating to the nature of preference, with an emphasis on the manipulation of variables while in active teaching situations relevant to identifying or changing the musical preferences of youth.

Furthermore, Bornstein & D'Agostino (1992) pointed out that there is also an abundant research involving passively experienced musical stimuli focusing on issues other than the direct effect on preference. This includes social perceptions and behaviors (Saegert et al. 1973); stereotypes and prejudices (Ball & Cantor 1974); aesthetic judgments (Berlyne 1974); attitude formation (Grush 1976); food preferences (Pliner 1982); implicit learning and implicit memory (Gordon & Holyoak 1983; Reber 1989, 1994, 1997; Peretz et al. 1998). The Tomatis Effect, better known as the Mozart Effect, is exposure to Mozart's music resulting in an increase of spatial-temporal reasoning (Rauscher et al. 1993, 1995, 1998; Rideout & Laubach 1996). Steele and colleagues (1998) debated the significance or even the existence of the effect because they failed to attain similar results.

Research by Bernheim (1886) involves the subject of suggestion; that is, an idea passively offered, subconsciously acted on, resulting in some physical mannerism relating to the offered idea. The genesis of his philosophy is with the concepts of Limault at the French school at Nancy at about 1800. At that time the word "suggestion" was strongly associated with the act of hypnotism. Bernheim, however, promotes the idea that suggestion also involves conscious behaviors. Baudouin (1920) admits that the definition of suggestion was vague and ill-defined. He maintains that the word implies a three-phase process:

1. A modification of something.
2. Unconscious actualization of the modification.
3. A visible manifestation of the modification.

It was not until 1978 that Lozanov applied the concepts of suggestion (suggestology) to matters of teaching, learning, and education in general. His use of music, however, was a background rather than an "object" to modify (Lozanov 1978).

Radocy & Boyle (1988) relate that incidental learning may occur through radio, television, and films but that formal instruction is necessary for total appreciation. The concept of learning music includes the development of musical expectations based on the perceptions and cognitions that result from immersion in one's environment and musical culture. Learning, nevertheless, requires action on the part of the learner. Note that the authors do not mention or differentiate among conscious, subconscious, or unconscious activity or actions. A closely related (if not synonymous) term "implicit learning" (Reber 1965) refers to learning that can occur without the conscious awareness of the learner. In addition the learner cannot explain his or her position but only that it feels right (Reber 1967, 1969, 1976, 1992; Dienes & Berry 1997). Studies in this area have involved artificial grammar using word strings, Chinese ideographs, and facial pictures. Future studies are suggested using musical materials. Presently (2002) Bernhard Sollberger of the University at Bern is researching implicit learning in a semimusical context using tones rather than letter strings.

Berlyne (1971) and Walker (1980) arrived at similar conclusions regarding the nature of preference and complexity as being an inverted-U or a quadratic function curve. Berlyne labels it the Optimal Complexity Model; whereas, Walker refered to it as the Hedgehog Theory. In both cases there is an optimal complexity level at which time a listener feels the greatest enjoyment, arousal, interest, aesthetic response, or emotional high. Beyond this level of complexity, the listener will become frustrated, disinterested, bored and possibly develop a dislike toward what he or she hears. A study by Hargreaves (1984) supports the Inverted-U hypothesis and then applies the basic concept to the effect of repetition on liking.

The "Mere Exposure Effect" (MEE) is a phenomenon experienced by most people in many diverse manners. Zajonc (1968) basically coined the term, but did not apply the concept to musical ends. Mere Exposure to anything is simply experiencing the stimulus passively, without explanation or directions: The effect is an increase in preference toward the stimulus. Meyer (1903) was the first to research this phenomenon. This relationship between repetitive exposure without explanation or study and increased liking has been confirmed in later studies. (Peretz et al. 1998).

Recent General Research Involving Musical Preference

Musical preference is a result of many variables. Finnas (1986) organizes these variables accordingly:

1. Studies relating preference to elements of music or sound such as tempo, complexity, dissonance, melody.
2. Studies relating preference to age group, culture, ethnicity.
3. Studies relating preference to social and economic standing, peer group, the effect of various models such as teachers, parents, mentors, media.
4. Studies that relate musical preferences to personal experiences.

Greer et al. (1974) conducted a study of the preferences of elementary-age students. Most survey studies of this type use verbal instrumentation (Likert scale) to obtain data. In this case, however, an "episodic reinforcement device" was used to collect their data. This instrument was an aural device (two tape recorders) that offered the student listening alternatives from which to choose, keeping track of the time spent at each alternative:

rock, nonrock, and white noise. The nonrock was basically Broadway music. The 134 participants were randomly selected from kindergarten through sixth grade. Grade-level comparisons were drawn using a Mann-Whitney U test. A main limitation of the study was the limited categories of music from which to choose. Today, including country music and ethnic music would certainly be warranted (Brittin 1996; and Fung 1996).

Research (LeBlanc 1979) regarding the musical preferences of fifth-grade students identified easy-listening pop rather than rock as their highest preference. The study included 278 students in eleven classes. LeBlanc developed his own survey instrument, the SOPI (Sound Organization Preference Index) consisting of a recorded tape and response sheet for 16 musical examples, each representing a specific musical style. Although the SOPI differentiated levels of preference, a reliability analysis showed that there was an excessive variance in retest scores. This could have been accounted for in the method of retesting the selected students (test-retest reliability).

In later research LeBlanc and colleagues (1996) measured the music preferences of 2,262 students predominantly from grades one through college, but including many adults and senior citizens (ages 6 to 91). Preference levels for all styles dropped to their lowest in sixth-grade and rose to their highest during the college years. There were 18 musical examples (two examples each of slow, medium, and fast tempi) with three musical styles: art music, jazz and rock. Examples ranged from 21 to 52 seconds, with the entire evaluation taking about 22 minutes. Participants were asked to mark along a 5-point continuum after the selection had finished. Preferences for the three styles were surprisingly close together across grade levels. Rock music was favored across all age levels and art music was competitive with other styles at all times. This led to a conclusion that the use of art music in the classroom can be as effective as any other.

Yet further research by LeBlanc et al. (1999) involved 2,042 students from Greece, South Korea, and the United States. Their method was similar, as were the results. A study by Hargreaves et al. (1995) drew conclusions similar to those of LeBlanc et al. (1996). This research involved fifth- and sixth-grade students and high school juniors and seniors. In a survey of 12 musical style categories, participants completed two rating scales: one a 3-point preference scale and another a 4-point level of musical experience scale.

Peer pressure is an example of conformity and is a force that causes one to do something for social reward or to avoid negative consequences. The Prestige Effect is also a force involved in conformity; that is, the effect of comments made by those considered expert (Asch 1948). This research, a survey of previous research in conformity, does not support common presuppositions or assumptions that peer pressure has a direct effect on preference (for music or anything). Finnas (1989a), on the other hand, compared seventh and eighth-grade Finnish students' privately held musical preferences with their publicly expressed musical preferences. They found that students state a lower preference for traditional (concert) music in a social group than expressed privately. However, they did not overtly exaggerate their preference for rock before their peers. A secondary finding was that pupils underestimate each other's preference for traditional music. Finnas points out that it would be of special interest to attempt to study preference in a more naturalistic social situation than was the case with this research.

Killian (1989) and Greer (1980) maintain that modeling is an important factor in creating or sustaining preference. Modeling consists of an individual observing an example (model) and proceeding to imitate it.

In a different but related type of study (preference modification) involving attitude rather than physical modeling, Dorow (1977) sought to modify the musical preference of 76 randomly selected fourth and fifth grade students by having the teacher show indications of approval (affirmations, head nods, and smiles) or disapproval (frowns, head shakes, negative words, or simply no approval signs) toward preplanned exposure to various musical stimuli. Results indicated that music taught with high teacher approval "will become more reinforcing" which means the student will spend more time listening to that particular example because their preference for it has been heightened due to the instructors' apparent attitudes toward it: an extension of the Prestige Effect.

There is an increasing interest in preference studies involving world music and music of other cultures. Fung (1996) created two instruments used in this study: The Musical Characteristics Rating Form (MCRF) and the World Musics Preference Rating Scale (WMPRS). Both contained 36 instrumental examples, 40 seconds each. A cassette recorder was used to play the examples. A 36-item survey sheet of 7-point Likert scales was used to collect data. Twenty-four eminent judges listened and scored the MCRF providing ratings of musical characteristics for each musical excerpt. Four hundred forty-nine undergraduate students responded to the WMPRS in groups of less than 35. The results were obtained using the Pearson correlations, a mixed design ANOVA for relationships between musical characteristics and preference and showed that musical characteristics, musical training and familiarity were significant factors in music preferences.

Another study by Brittin (1996) investigated listeners' preferences for music of other cultures using a 10-point Likert scale as well as the CRDI (Continuous Response Digital Interface) device, a hand-held dial connected to a computer for continuous ratings. Statistical analyses included a split-plot repeated-measures design MANOVA and Pearson product-moment tests. A three way ANOVA was used to interpret the data (gender, age, region,and preference). Brittin & Sheldon (1995) designed a study involving 200 university students to measure the differences between static measurement (Likert) and Continuous (CRDI) of musical preference level. The examples differed by tempi. The research indicated no significant differences in scores between the two test methods. A similar result occurred in a study by Johnson (1992) where high school bands were being judged by clinicians.

Two studies in a continuing series of music-preference research projects (LeBlanc & McCrary 1983; and LeBlanc & Cote 1983) involved fifth- and sixth-grade students. The former study measured the effect of tempo on the preferences of 163 students. The latter study involving 354 students investigated relationships among style, tempo, and performance medium with regard to preference. Both used a listening tape with an average of 30 selections, at about 40 seconds each. The testing sessions lasted about 28 minutes each. Students were told to wait until the end of the selection to respond to a 7-point Likert scale anchored with "Like a lot" (7) and "Do not like at all" (1).

Montgomery (1996) maintains that up to his time, all studies involving tempo and preference fell short of isolating and controlling the independent variable conclusively.

He attempted to clarify this shortcoming. The 996 participants in his study represented all grades from Kindergarten through eighth with an even gender distribution. Fifteen excerpts of early romantic opera orchestral music were used. They included no vocals, all duple meter, and all unfamiliar examples (not in school music curricula). Each example (slow, medium, or fast) was 20 to 35 seconds. The survey instrument was a three-choice scale using pictographic faces (frowney, neutral, smiley). Test-retest reliability was established and the results indicated important statistical significances, one of which suggests that the relationship between tempo and preference is consistent regardless of musical style: Quick is preferable. Listener age was a major factor on level of preference.

Research by Hargreaves et al.(1995) generally concur with Montgomery (1996). Jin (1999) conducted a study similar in structure to LeBlanc & McCrary (1983). Seven hundred thirty-four participants answered a seven-question music preference survey, listened to 18 musical examples and responded on a 7-point Likert scale their level of liking. Results conformed to previous research in this area.

Music research regarding race and musical preference generally shows a proclivity to prefer musical performances by their own race. (McCrary 1993; and Morrison 1998). Morrison surveyed 469 participants in grades six, seven, and eight, completing the instrument as in-class groups. There were 10 instrumental jazz musical examples, each evaluated along a 9-point scale. A major challenge was to control the examples for culturally associative cues and use examples that were unfamiliar. To eliminate bias toward any one instrument, only full ensembles were used. Different tempi were used to avoid tempo bias. McCrary's study involved 221 participants with 20 taped examples of pop, jazz, gospel, and folk by both black and white artists. Each person completed two 7-point Likert type scales, one indicating preference for the piece, the other indicating the race of the performer. The results of both studies with only a few exceptions indicated an overall preference by respondents towards music of their own race.

Research Specifically Related to Music Preference Modification

Finnas (1986) indicated two main avenues of explaining the relationship between musical familiarity and musical preference. One method involves correlating a verbally expressed level of familiarity with a survey indicating the subject's preference for certain musical selections. The other method involves an experimental study in which familiarity is the dependent variable and repeated exposure is the independent variable. The latter case has a greater control over intervening variables, thus has a better chance of indicating a causal effect between repetition and familiarity, which in turn causes a positive effect on or modification of preference. The direction, however, is not always predictable (Radocy & Boyle 1988, p. 261). It follows that repetition is a process that has the capability of making the unfamiliar familiar, regardless of the dependent variable.

Bradley (1971) posed the question: "To what extent must music be familiar to the listener to ensure an adequate listening response?" (p.296). Getz (1966) previously concluded that an aesthetic response could be greater with more than one hearing. In fact he found an increase in score by the second and third week of repeated exposures. Whereas Getz's data collection was basically by self report by the participants, Bradley's study involved 14 classes of seventh-grade students, a pre-test and post-test with exposure period of 14 weeks, twice per week at 30 minutes per session. The music selections were art music of tonal, atonal, polytonal, and electronic styles. T-tests indicated significant gains in all categories, suggesting that a simple routine of repetitive listening can be effective in developing more positive preferences for art music.

The inverted-U model (Berlyne1971 and Walker 1980) has been used to explain other phenomena than complexity versus aesthetic enjoyment. Jakobovits (1966) suggests that the relationship between frequency of stimulus exposure and musical meaning is also an inverted-U function. He refers to the initial exposure as "semantic generation" and the fizzling-out of enjoyment as "semantic satiation". His two-part study exclusively used the "Hit Parade"preference lists from the Variety magazine, which involved popular songs of the mid 1960's.

Radio plugging of songs in the 1930's and 1940's presented an example of creating preference toward a musical stimulus through repetition (Wiebe 1940). His research involved two classes of high school students and two classes of college age students. It was the power of preference modification through repetition that inspired the payola scandal (paying DJs to play a particular song). Wiebe also used the Hit Parade section of Variety magazine as a resource for his research. The main outcome of his work indicated that plugging an initially enjoyed piece was not effective in increasing further liking but only maintaining its popularity. However, plugging does positively affect the rating of songs that were originally less well-liked.

Research by Peery & Peery (1986) involved 45 preschool children in an experimental design over a period of 10 months. All students indicated by a 5-point Likert scale their preference on a pre-test and all indicated a positive level of liking. In a classroom setting the experimental group received weekly 45-minute classical music sessions. The students listened to the examples, sang the various themes, played musical games with the music, learned about the instruments of the orchestra. A post-test indicated that the experimental group maintained the level of liking, whereas the control group indicated a drop in preference. A one-way ANOVA indicated a significant change in the level of preference with four of the pieces.

Research by LeBlanc et al. (1983) suggest that children of various age-groups consistently preferred fast music with a strong beat. The purpose of a study by Moskovitz (1992) was to test and compare the effect of repetition on 235 fourth-grade students' preferences toward slow and quick excerpts of art music. In an experimental design all participants were exposed to one slow and one fast example in each of four style periods (Baroque, Classic, Romantic, 20th Century). A prepared example was played at the beginning of each music period, twice per week. The control group heard only fast pieces, whereas the experimental group heard one slow and one fast. Data were analyzed using A Z-test analyses for each style period. The results indicated that repetition had an effect on the preferences of children for slow art music.

In a contrasting study, Brittin (1991) explores alternatives to repetition as a means to modify preference. Musical experience seems to be a cause for preference modification, as does adult and peer approval, although peer effects diminish with increasing age. In an attempt to measure the effect of overt categorization on music preference, Brittin examined preferences for specific styles and quantified the results both temporally (CRDI) and statically (Likert). Five hundred thirty-four music appreciation students were assigned to one of three treatment groups: Group 1 classifies excerpts according to categories given; Group 2 does not classify at all; Group 3 determines for themselves what style it is and designated it. Using a 10-point Likert scale, all participants rated their preference for each of five styles: country, rock, jazz, classical, and pop. Fourteen musical examples were selected, about 40 seconds each with 15 seconds of silence between. A fourth group was randomly selected from the other groups to manipulate the CRDI. The results indicated 1. There was a generally higher preference rating for those using the CRDI: 2. Overt categorization did not seem to affect preference; and 3. There was little difference in preference between those who were free to label the example as they choose and those restricted to the given labels. Hargreaves & Castell (1986) investigated the effects of age level on musical likes and dislikes toward common melodies (nursery rhymes, carols). Short of doing a longevity study or case study, tracking one person over a long period, they hypothesized that even in this survey format the inverted-U theory would apply over time. The 96 participants ranged in age from four to adulthood (18+) in six different groups. The musical materials were 20 short melodies, five in each of four categories: familiar melodies, unfamiliar melodies, novel tone sequences approximating a folk tune, and tone sequences totally out of style. The younger students were tested individually, the older ones in groups of eight. A two-way ANOVA showed significant differences between each age group compared to types of melodies, the independent variable in this study being familiarity. The results indicated a conforming to the inverted-U hypothesis and showed a preference shift between familiar and unfamiliar melodies over a long period of time.

Carper (2000) developed an experimental design study that examined the effects of repeated exposure (including instruction) on the least preferred of four culturally different musical styles. In this study 63 kindergarten and Pre-K participants were exposed to six 30-minute instructional sessions. A self-report measure (5-point Likert scale using faces) was used to record each student's preference level. All sessions dealt with one or more aspects of the Japanese music. Results after the post-test showed that the treatment was effective: There were significant differences in preference scores between the least preferred (Japanese) and the most preferred styles in the treatment group. There was no significant difference in response between the various styles of the treatment group, implying success in attempts to modify preference toward a least-liked musical style.

Schuckert & McDonald (1968) studied the effects of passively induced familiarity (mere exposure) on the preferences of preschool children. This study involved passive listening (no instruction) in a classroom condition to two different styles of music, jazz and classical. Their expressed purpose was to determine if controlled exposure to less preferred musical styles would affect a broadening of their musical preferences. Participants included twenty students ages four to six at the University of Tennessee preschool. The children were pre-tested for their preference level toward jazz and classical styles. They subsequently were given four individual "interviews" during which time they were exposed to their less-liked music. The "interview" was either a gentle play activity, a puzzle solving time, a small-construction-toy fun time, a kaleidoscope adventure or a variety of books to examine. The last phase was a post-test. Shifts in preference were noted. Although the changes did not reach significance, nearly one-half of the participants showed an increase in level of preference for formerly designated less-liked style. It was agreed that more research in this area was warranted.

The “mere exposure” theory argues that repeated exposure to a stimulus without explanation or primary focus is a sufficient condition to enhance attitude toward that stimulus. (Zajonc 1968). Zajonc defined mere exposure as a condition of stimulus awareness just above the conscious level, but not the primary mental focus. He promotes the idea that the relationship between exposure frequency and liking is monotonic: The frequency of exposure and level of liking occurs as a linear relationship (as opposed to the inverted-U) although the increase in intensity of liking levels-out over time. In addition, the stimulus should be novel (new) to the subject.

Mere exposure research has received much empirical support: A twenty-year summary meta-analysis by Bornstein (1989) includes over 200 projects since the seminal research of Zajonc (1968). Furthermore, Bornstein recites only the studies that involved human participants. Most studies, unfortunately, do not involve aural stimuli but rather visual. Those few dealing with aural stimuli involve primarily melodic sequences. There is only one cited that concerns real music as opposed to the melodic sequences, and the sound source is created by a synthesizer. Furthermore, only 16 studies used child participants. In one study appropriate to this project, researchers exposed fourth-graders to several 30-second sessions of Pakistani folk music (Heingartner & Hall 1974). The students were tested using a 6-point Likert scale reflecting levels of liking. The results indicated a positive change over the period of the exposures.

Brentar et al. (1994) suggested that increasing exposure to a song will lead to increased affect toward that song according to the inverted-U theorem but they were unsure of the number of exposures until the ultimate point of affect or how many until the decrease in enjoyment would begin. They knew, however, that the conclusion would involve a combination of the variables, complexity, and novelty. In a pilot study 99 participants listened to and critiqued a selection of 6 out of 57 typical top 40 popular songs of the mid 1980's. Of the 57, four were selected based on novelty and complexity. In the main study 54 participants (not part of the pilot study) visited the Instructional Media Services media lab twice per week for two weeks. Each session consisted of listening to a tape with 16 songs: four repeated songs (two of high complexity, and two of low complexity – each one stylistically different) and 12 filler but enjoyable songs. Each visit lasted about 1 hour and concluded with a questionnaire. Affect was measured on an 11-point scale. On the final session a 4x4 repeated measures ANOVA (exposure, song) produced the necessary statistics. The study's main hypothesis regarding the Inverted-U relationship was supported. The point of highest affect generation and ultimate satiation occurred sooner than was expected. Brentar et al. (1994) concluded that Zajonc's (1968) model has limited application to complex and meaningful stimuli such as music or paintings. Also, Brentar points out that Zajonc (1968) maintains that mere exposure is simply making the stimulus barely accessible to the individual's perception. However, Konecni (1976) maintains that in the real world, musical exposure is usually an issue of divided attention: Music occurs in some context. The strength of the stimulus competition will determine the apparent strength of the musical stimulus.

Bornstein & D'Agostino (1992) investigated and compared the magnitude of the exposure effect produced by subliminal stimuli versus stimuli that are consciously perceived. The abstract unmeaningful stimuli are polygons and Welsh figures and the meaningful social stimuli are photos of college-age women. The 121 undergraduate participants were exposed to the stimuli at different exposure frequencies. Half of the stimuli were exposed at a subliminal level and half were exposed at the supraliminal level. A 100-millisecond blank screen separated each event. Following each stimulus, participants recorded their liking and recognition judgments on a nine-point Likert scale. All participants were tested individually and used a tachistoscope . The results were analyzed using a 2x2x5 mixed ANOVA. Interestingly, the subliminal stimulus produced significantly stronger mere exposure effects than did stimuli that were clearly recognized. Two potential reasons offered:

1. Boredom results from plain polygons and senseless Welsh figures.
2. Stimulus awareness inhibits the exposure effect resulting in a stronger appearance of the subliminal effect.

According to Peretz et al. (1998) the mere exposure effect is best explained and understood as an implicit memory phenomenon. "Implicit memory refers to the behavioral changes that are attributable to a prior episode with an item and that cannot be accounted for by explicit memory for that event. Typically, implicit memory is revealed by tasks that do not require intentional or conscious recollection of events." (Schacter 1987). Many studies in mere exposure as well as IM obtained evidence for a frequency-affect relation. This suggests strongly that the mere exposure effect is a pervasive phenomenon in music. The purpose of the study by Peretz et al. (1998) was to establish the implicit nature of the mere exposure effects in the musical domain. In the study phase of the experiment, by listening to selected tape recordings, 48 participants from the University of Montreal all incidentally encoded the musical material by performing a familiarity decision task , for example, "Is this melody familiar?" In the test phase under lab conditions the subjects were individually presented with the same material, half of which directly related to the melodies presented in the study phase. They all responded by rating their judgments on a 10-point Likert scale. With the affect task, the purpose was to rate each stimulus from "I do not like" to "I like it a lot". With the recognition task, the participants were required to rate their level of confidence in recognizing each stimulus as having been presented in the prior familiarity decision task from "No, certain" to "Yes, certain". The results showed the presence of mere exposure effect on music liking after only one repetition.

Gordon & Holyoak (1983) also studied the "mere exposure" effect. Their experiments show that the exposure effect acts in a similar manner to "implicit" concepts of learning and rule induction. This type of cognitive activity has been labeled, "implicit learning" (Reber 1967). Implicit learning and the development of affect take place under similar and simple conditions, that is, the mere exposure of stimuli. This description of learning is similar to Zajonc's (1968) description of learning by mere exposure: automatic, effortless, nonverbalizable, unconsciously based. Gordon and Holyoak's (1983) study was performed to determine whether positive affect occurred through exposure to a set of letter strings generated by an artificial set of rules. During the learning phase, 46 participants were given strings of letters according to artificial grammar rules and asked to memorize them. During the test phase, letter strings were presented before each participant and they were to state whether they were the same as they had learned, different but according to the rules, or not "grammatically correct". They also indicated how confident they were about their responses (6-point scale) and they indicated how much they liked the strings. The results of this experiment were somewhat inconclusive; however, the results support the conjecture that relating a stimulus to a learned structure is pleasing (Meyer 1956).

Studies Relating to Background Music and Suggestology

Background music is any music played while a listener is primarily engaged in some task or activity other than listening specifically to that music (Radocy & Boyle 1988, p.272). Individuals often use background music informally. Sometimes they do so for no particular reason, or for a specific purpose such as staying awake or going to sleep, establishing a mood, creating an aural atmosphere. Music also can be used to block out or mask unwanted sounds.

The effect of background music on human behavior has been questioned and studied frequently by the commercial and academic communities (Geringer & Nelson 1979). However, the conclusions have been somewhat unclear. Responses to background music may vary with the age and the education of the listener, musical complexity of the pieces, and type and difficulty of the performance tasks accompanying the background stimulus. The study by Geringer and Nelson was to investigate whether background music affects music and no-music students' performance on a musical task in different ways, whether repeated exposure to a piece of music affects preference for that piece, and whether task or no-task conditions with background music affect subsequent music performance. One hundred twenty music theory and elementary methods class students participated in this post-test only design experiment and were assigned to one of three groups: task plus background music, background only, or task only. The task was a "music quiz" in riddle form. The background music was a four and one half minute piece in AABA form. The post-test consisted of four 35-second selections including the task piece. Students were asked the question, "Which would they prefer to own?" The results were:

1. Background music affected no-one.
2. Music students scored higher that the non-majors.
3. Repetition of background music did not increase preference for it.
4. Music majors differed in preference level from the non-music majors.

Basically, background music exposure to an unfamiliar excerpt with three repetitions failed to affect preference.

Konecni & Sargent-Pollock (1976) address the issues of divided attention and cognitive capacity. They suggest that choice involving stimuli of different complexity may in part reflect the amount of processing effort that a subject simultaneously expends or believes he or she will expend on other tasks during the processing of the chosen musical stimulus. The purpose of the study was to show that capacity factors can play a prominent role in this type of choice. In this study, 100 participants (all female university students) listened to music of varying complexity, performed a task of differing difficulty at the same time, received an aural mask of either mild or aversive quality prior to the listening. Each participant had their blood pressure read 12 different times during the procedure, and each filled out a booklet according to individual instructions. The results illuminated several important issues:

1. The more physiologically arousing, the lower the preference for complex melody.
2. Each person possesses a finite processing capacity. Exceeding it causes mental overload. In a divided attention situation, which is 99% of the time, the primary or compulsory activity will require a certain level of cognitive processing, leaving whatever is left for the competing stimulus.

3. It is not exclusively a matter of energy expended to define a complex task. Sit-ups take little thought but lots of energy; whereas, driving requires a lot of thought and little energy.
4. "Real life situations are where the type of music one chooses to listen to may in part be governed by the processing demands of the activity in which one is concurrently engaged"(p. 354).

In a study of the effects of background music on participants exhibiting extrovertishness and introvertishness, Daussis & McKelvie (1986) discovered that scores for extroverts were similar in both music and no-music condition; whereas, the introverts scored lower with the presence of the music. A music survey and the Eysenck Personality Inventory determined psychological classification. Rock and Roll music was played very softly in the background condition. The results provide partial support of the hypothesis that those exhibiting extrovertishness would be affected differently from those exhibiting introvertishness. The results also support the idea that the effects of music on cognitive activity are partly mediated by individual differences. In this case the cause for the difference in scores could not be definitively attributed to personality or musical knowledge.

A similar study by Kwiatkowski (2001) examined the effect of background music on the rhythmic aptitude of 128 four year-old children from six early childhood centers. The results of a three-way ANOVA indicated that listening to Baroque background music showed no significant differences in scores between genders, treatment groups or preferences. In another somewhat similar study of the effects of background music on junior high school classroom learning, Johnson (1999) established two groups: music and no-music. The same material was taught in both classes. The results of this study indicate that the control group (no-music) outscored the experimental group.

Savan (1999) points out that in our modern western world, massification of music is a reality. " Understanding the effects of music on our behavior and cognitive processing has become increasingly important"(p.139). Regarding our physiology, "It therefore seems possible that aural stimulation could directly affect pupils' emotional states and even perhaps counter the effects of stress" (p. 140). In an earlier study (Savan 1998) observed and assessed the physiological responses to the music of a variety of composers. In that study only the compositions of Mozart produced statistically significant depressions of the systolic and diastolic blood pressure, pulse rate, and body temperature. The later study (Savan 1999) utilizes the Mozart excerpts creating a two-hour tape that was used as background in 10 successive science lessons lasting 40 minutes each. The experimental group is a class of special education needs (SEN) students and emotional and behavioral difficulties (EBD) students. The results indicated a significant drop in all physiological parameters and a resultant improvement in behavior.

In view of the fact that studies involving the effects of noise on task performance have been inconsistent, Ng & Turnbull (1997) sought to examine the ambient conditions of a study environment which exhibited noise: What and how much noise was acceptable for the best study conditions? Various theories suggest that people will seek arousal that gives them optimal performance. The purpose of this study is to determine if students studied as effectively in an environment that had a preferred level of ambient noise as compared to a non-preferred level of ambient noise. One hundred twelve university psychology students participated by performing two 25-minute readings followed by a 10-item multiple choice test. The first condition was with noise, and the second without noise. The results indicate that students studied as effectively with noise as without.

Though not statistically significant, those who preferred noise performed better with noise. University students tend to know what conditions work best for them.

Summary

This review of literature indicates a rather large number of studies relating to the dynamics of and the influences on music preference. Research has addressed musical variables as well as psychological, personality, social, and societal variables. However, there is considerably less research accomplished regarding the modification of preference. Extant studies do indicate that musical preference can be altered, but there is no guarantee in which direction it will go. There are even fewer studies regarding modification of musical preference by passive means, and fewer yet involving middle-school age children. Research dealing with background music primarily involves only the use of music for some other purpose such as marketing, environmental ambience, or for therapeutic conditions.

In the last fifteen years there has been an increased research interest regarding elements of implicit learning, implicit memory, perceptual fluency, priming, and primacy of affect. It appears that these research areas combined with or relating to studies involving background music are beginning to surface.

CHAPTER 3
DESIGN OF STUDY

The overall objective of this research was to study under normal classroom conditions the effects of passive listening on the musical preferences of fifth- and sixth- grade students toward one major musical genre—concert/classical music. A secondary purpose of this research was to identify any dominant characteristics which could be associated with listeners who demonstrated a positive change or with teaching conditions or attitudes that could be associated with any positive or negative change.

Research Design

As Table 3-1 indicates, the design of this study was quasi-experimental (Shavelson 1988). There was a pre-test, experimental treatment, and post-test. The project, however, lacks total randomization: Group sampling was eventually by convenience.

Table 3-1. Design of quasi-experimental study

Pre-test	Experimental Treatment	Post-test
3rd week of September 2001 827 research participants 20 experimental class groups 17 control class groups 36 items: 24 demographic items 12 listening examples	16 week duration 4 CDs: One per month 60-90 minutes per week	2nd week of February 661 research particip. All groups tested 12 listening examples Teacher exit survey

Selection of Subjects

This project was conducted in Polk County, Florida, a primarily agrarian county, population about 500,000 with over 74,000 students in 16 High Schools, 19 Middle schools and 67 Elementary schools. The participating schools were chosen because they reasonably represented Polk County's overall school population. The study involved 37 classes at 6 different public schools: three elementary (169 fifth-grade students) and three middle (492 sixth-grade students). All six schools had received an A, B, or C on the Florida statewide school assessment. Experimental and control groups were intact classes within each school. Initially, whether classes would be experimental or control was determined by the flip of a coin. The final decision was made after consulting with the teachers. If a teacher felt uncomfortable about fulfilling the requirements of the study, then one of the other consenting teachers took their place. Each of the schools, with the exception of school 4, had an equal number of experimental and control groups. School 4 consisted of all experimental groups in order to increase the overall number of fifth-grade experimental research group participants. Initially there were 827 participants; however, 661completed both the pre-test and post test and, therefore, represent the population.

Table 3-2. Numbers of participants included in the experimental and control groups

School	Experimental	Control	Total number
Middle school 1	106 [5 classes]	113 [5 classes]	219
Middle school 2	62 [4 classes]	66 [4 classes]	128
Middle school 3	76 [4 classes]	69 [4 classes]	145
Elem. school 1	34 [2 classes]	29 [2 classes]	63
Elem. school 2	48 [3 classes]	0	48
Elem. school 3	28 [2 classes]	30 [2 classes]	58

Tables 3-2 and 3-3 show the numbers of the research participants at the individual schools and the gender composition of these groups.

Table 3-3. Gender composition of the groups by student numbers

School	Experimental Group		Control Group	
	Males	Females	Males	Females
Middle school 1	46	60	42	71
Middle school 2	24	38	28	38
Middle school 3	45	31	43	26
Elem. school 1	18	16	18	11
Elem. school 2	20	28	0	0
Elem. school 3	16	12	9	21
6th grade mid. school total	115	129	113	135
5th grade elem. school total	54	56	27	32
Gender by group totals	169	185	140	167
Group population total	354		307	
Total research participants	661			

The attrition (166 participants) that occurred was primarily due to students moving around, in, or away from Polk County, as well as classroom changes and immediate absences. Finally, the experimental group consists of 20 classes for a total of 354 students, and the control group consists of 17 classes for a total of 307 students.

Although 74 % were sixth graders due to larger middle schools, the overall distribution of participants by both group and gender is fairly even: 53% of all research participants were in the experimental group, 53 % of all participants were girls. Further demographic statistics are found in tables 3-4, 3-5, 3-6, and 3-7.

Table 3-4 shows a comparison of the students' individual musical experience between the experimental group and the control group. By assigning 1 point per musical activity, the Group Musical Index was computed. There appears to be an 8 % advantage in musical experience by the experimental group over the control group. According to

Table 3-4. Research participants' musical experience index by grade, group, total

	Group	Band School	Orch School	Chorus School	Guitar Pvt.	Hndbell School	Piano Pvt.	Church Music	Musical Index
5th	Exper.	2	28	53	27	24	32	30	196
	Control	6	9	25	14	15	13	22	104
6th	Exper.	74	19	112	46	37	95	81	464
	Control	54	34	102	45	38	108	74	455
					Summation				
All	Exper.	76	47	165	73	61	127	111	660
	Control	60	43	127	59	53	121	96	559

the index, the sixth-grade experimental participants have an average of 33 % more musical experiences than the fifth-grade participants.

Table 3-5 is an economic indicator based on a family's qualification for the free or reduced lunch program as reported by the school cafeteria supervisor.

Table 3-6 is a scholastic achievement scale based on average grades received as reported by each student's home room teacher. The assessment is an opinion drawn at the time of the post-test rather than determined by comprehensive testing. The grade index is the average academic level of each group computed on the basis of A=4, B=3, C=2, D and F = 1. Each number represents the quantity of students receiving that particular grade. Divide the group point total by the number of students in each group to obtain the group grade point average.

Table 3-5. Economic indicator by percentage of subjects participating in the free/reduced lunch program

Group	Those who do qualify	Those who do not qualify
5th grade experimental	64	36
5th grade control	66	34
6th grade experimental	36	64
6th grade control	52	48
Summation		
Experimental	45	55
Control	54	46

Table 3-6. Comparison of academic achievement between groups

Grade Levels	A	B	C	D & F	Group point total	Group ave. grade point
5th grade experimental grp.	8	35	34	33	239	2 .17
5th grade control group	5	17	19	18	127	2 .15
6th grade experimental grp.	18	68	108	50	542	2 .22
6th grade control group	30	49	88	81	524	2 .11
Summation						
Experimental group	26	103	142	83	780	2 .20
Control group	35	66	107	99	651	2 .12

Table 3-7 reflects the ethnic diversity of both the experimental and control groups. Caucasians represent 54 % of the population, 17 % are African Americans, 19 % are Hispanics, and 10 %. are the others (multi-racial, Asian, American Indian).

Table 3-7. Comparison and description of groups by ethnic division and gender as a percentage (n=661)

	African American		Caucasian		Hispanic		Other	
	M	F	M	F	M	F	M	F
Experimental group	8	9	27	27	8	11	5	5
Experimental group total	17		54		19		10	
Control group	7	12	27	24	9	10	4	7
Control group total	19		51		19		11	
Polk County average	14		74		10		2	

Research Instruments and Music

Two research instruments were developed for the study. The first consisted of two parts: A Demographic Data Survey (DDS)(Appendix A) and a Listening Preference Survey (LPS)(Appendix B). The second is the Teacher Exit Survey (TES)(Appendix C).

Demographic data survey. The DDS first requests information involving their personal profile (questions 1 - 6): This includes age, class, gender, and ethnicity. The survey then requests information regarding their musical experience (questions 7-18). This includes band, orchestra, and chorus membership. Information regarding academic grades (question 17) was submitted by the homeroom teacher and information regarding participation in the free or reduced lunch program (question 25), was provided by each school's food service manager. Questions 19 to 24 not only indicate their preference towards musical activities, but also serve to acquaint the students with the mechanics of the upcoming 7- point Likert Scale in the listening section.(LPS).

Listening preference scale. The LPS is a series of twelve 7-point Likert scales used to record the students' preference response toward specific listening example. Scores could range from 1 (don't like it at all) to 7 (I love it), with the midpoint 4 being neutral. This form was used for both the pre-test and the post-test utilizing the same listening examples and audio equipment.

This survey-type instrument was pilot tested with two groups of college students: one humanities class, one music appreciation class and one fifth-grade class. After necessary changes were made, the survey was read by three Polk Community College professors of English and three elementary school fifth-grade teachers.

Pre-test/post-test and listening CDs . All listening examples (Appendix D), were recorded on a compact disc using a Harmon Kardon CDR-2 Music CD Burner, a Technics RSTR265 cassette tape deck, a Technics SLPD888 CD player, a Kenwood KRV6020 Preamplifier/Amplifer and a Peavey RQ200 Six Channel Mini Consol Mixer. Verbal instructions (Appendix I), were recorded using a Shure SM 58 microphone. Portable playback equipment included Sony (PHDS 200 Studio Standard), Aiwa (CA-DW539), and Sanyo (CWM 470).

Nature of LPS musical examples. The 12 musical examples contained on the pre-test/ post-test CD represent six classical/concert style selections and six of several contrasting musical styles. The non-classical style pieces served primarily as distractors. They did, however, represent legitimate contemporary examples of popular music styles. Each example was verbally introduced and was 30 - 35 seconds in duration with a 5-second mask of silence between. The entire survey required about 35 minutes to complete and was thus limited to12 examples to accommodate the attention span of that age group (11 - 12 year old). Also, the number of examples was limited to 12 to avoid redundancy that might have resulted in careless or complacent responses.

Nature of treatment CDs. Four CDs were created to serve in the experimental treatment. The music included on each of the CDs is listed in tables D-2 to D-5. CDs one, two, and four contain European orchestral art music, primarily of the Baroque, Classic, and early Romantic period styles. CD 3 contains music specifically of the Christmas season such as the Corelli "Christmas Concerto", but also contains come familiar vocal works arranged for orchestra as well as two choral pieces: "Hallelujah Chorus" (Robert Shaw recording) and Silent Night (Take 6 recording). The music list was initially selected by the experimenter and then modified by a group of three judges: one musicologist and two piano professors.

Reliability. Reliability indices were computed by Cronbach's Alpha as a measure of internal consistency. The Alpha value in this case is .8530 for twelve items. For the six art music style examples the alpha is .9177. For the items which represent other than art music, the alpha index is .5896. These levels indicate that the test is well constructed and quite reliable, and that the probability of attaining similar scores upon retest would be high for the art music examples, but questionable for the popular styles.

Selection of Schools and Teachers

The project was first introduced at a pre-school-year music area meeting at which time the general music teachers were asked to consider being a part of the study. A letter with a return form was given to each teacher (Appendix E). The response was not as strong as it needed to be; therefore, the researcher met with the Polk County Music Supervisor, Frank Howes, and the Assistant Superintendent of Instructional Services, Dr. Robert Helmick to gain their approval and support. It was agreed that the project would not concern the general music teachers due to their already busy schedules but that the research could involve the classroom teachers. They approved the project and suggested immediately contacting the principals at each of the selected schools (Appendix M).

School selection. School selection was based on the schools being somewhat typical of Polk County, organized as self-contained classrooms, and having received an A, B, or C on the Florida school assessment program. Potential schools were selected and the principals were contacted. In turn, the principals polled the grade level teachers, and made their final decision.

Initially two elementary and three middle schools met the criteria and agreed to participate. Shortly thereafter one other elementary school requested to be involved and one middle school decided to withdraw. Therefore, another middle school was selected and the third elementary school was included. The newly included middle school, however, was a technology magnet school, a school of choice. This means that the students attended that school by request and acceptance rather than by geographical location.

The experimenter then met with the principal and the fifth-grade or sixth-grade team at each school to describe the study in detail, gain their formal approval, establish the experimental and control groups, and determine who needed audio equipment. At a second formal meeting with the teachers, several portable CD players were distributed to the experimental group teachers who needed them, final instructions discussed, and the first of the four CDs were disbursed.

Duration of study. The study lasted from the beginning of October 2001 till mid February 2002, a total period of about 16 weeks. This duration was determined both by convenience and from recommendations of previous research. Overall, the instructors felt that there would be the fewest school or class conflicts during September and February, and the researcher felt he could organize his schedule most effectively during those two months. Preference research by many authors including Meyer 1903; Jacobovits 1966; Bradley 1971; Schuckert & McDonald 1987; Brentar et al. 1994; Lee 1995; and Byrnes 1997, suggest that longer exposure periods than what they selected (maximum of 14 weeks) would most likely yield more definitive results. However, Robert Bornstein (1987) submits that the most effective result of exposure (time vrs. mere exposure) depends upon both subject and method variables and suggests between ten and twenty exposures for maximum definitive effect. He and many other authors feel that the inverted U function holds true rather than simply suggesting that more exposure time is better. Their research, however, involved laboratory conditions rather than natural conditions. Therefore, this researcher selected a longer period of time for our study.

During this period of time, while distributing each new CD, the researcher met with the teachers individually, discussed any problems, and encouraged them to follow the plan. Communications were also maintained via e-mail on several occasions.

Research Procedures

Institutional Research Board. The research project was submitted to the University of Florida Institutional Research Board for its approval (Appendix N). In addition to a full disclosure of the research project, the board required both parental consent and student assent.

Parental consent. The parental consent provision mandated by the University of Florida Institutional Research Board was contested by the researcher on the grounds that the project presented very low emotional and no physical risk factors and that the parents or other family members might unconsciously make careless comments to the child or their friends which could bias the child's responses and thus effect the research results. A copy of this letter is found in Appendix F. The waiver was denied and the parental consent was obtained (Appendix G).

Student assent. In addition to other necessary instructions, an assent script was also carefully read to each class at the onset of each testing session (Appendix H).

Classroom procedures. The teachers were instructed to expose the students to between 60 and 90 minutes of music per week. This could be accomplished in whatever way was comfortable to them and appropriate to their teaching style: at the beginning and end of class, during quiet study time, during certain lectures or presentations. At all times the music was to be played very low but at an audible level. It was to be treated as background music to whatever other activity was taking place. If a student showed an interest in the background music and brought it to the attention of the teacher, the teacher was to offer a short answer and then quickly shift back to the classroom activity. The students were not to know that the music was for research purposes. The experimental-group teachers were provided a new CD each month for the next four months. At the conclusion of the study, the experimental group teachers completed the exit survey (TES) (Appendix C). This instrument served to identify individual attitudes and more clearly describe how each instructor applied the passive listening.

Procedures for implementing the listening preference survey. The testing process occurred as follows:

1. Researcher was introduced to the class by the teacher.
2. Researcher introduced the project according to a written script.
3. Seats were turned facing forward and in rows to minimized eye contact between students.

4. Survey forms were distributed to all participants. Those whose parents did not wish them to participate were allowed to read or study.

5. Each survey item was read and explained as necessary.

6. At the appropriate time, the 7-point Likert scale was demonstrated.

7. Questions were answered prior to the listening section (Appendix I).

8. Students were reminded to be very quiet, stay focused on their own survey form, and respond honestly: Their responses should reflect their true feelings at that moment.

9. The CD had final instructions at the onset of track 1. Thereafter, each example was announced following a five-second mask of silence.

10. At the conclusion of the pre-test and post-test, the researcher collected and retained the response forms.

Treatment of Data

The dependent variable in this study was the stated preference level toward each example. The independent variable was the experimental treatment, consisting of passive listening. The control variables are class, group, ethnicity, gender, economic level, and musical experience.

As stated in chapter 1, a classic split-plot analysis of variance (ANOVA) is the technique used to analyze data in a pre-test/post-test (repeated-measures) experimental design (Shavelson 1988). SPSS statistical software (Version 10.0) was used to treat the raw data. The researcher identified the basic characteristics (the profile) of all research participants. A complete examination of data involved various cross tabulations and correlation indices.

CHAPTER 4
RESULTS

This chapter is organized into five main sections:

1. The main effect of passive listening, the change of preference by the entire population, and the main effect on various groupings of subjects.
2. Responses to the individual listening examples using descriptive statistics.
3. The in-tact group responses compared to each other.
4. The responses of the experimental subjects and groups whose preferences shifted in a positive direction.
5. The results of the Teacher Attitude Survey.

Using SPSS software (Version 10), the split-plot analysis of variance (ANOVA), the paired-samples t-test, and various statistical measures were selected as procedures for the analysis.

The study began with 827 participants, but due to attrition for various reasons, the results are based on the responses of 661. The experimental treatment group (n = 354) consisted of twenty classes: seven fifth-grade groups and thirteen sixth-grade groups. These classes received from 60 to 90 minutes of passive listening to background music played very softly during appropriate times as determined by each teacher. The control group (n = 307) consisted of seventeen classes and was administered no treatment.

A score was established for each respondent based on a level of preference from 1 (Do not like at all) to 4 (neutral attitude) to 7 (really love it) for each of twelve different examples on the test. The six even-numbered examples involved concert music, which was the experimental treatment. The six odd-numbered examples represented the more popular music styles—Broadway, classic rock, rhythm and blues, jazz, country, and Hispanic. Each concert music example was intended to be rated on its own merits rather than comparing them against each other.

The term "score," therefore, means either an individual response to one example or the sum of all six treatment examples, in which case the summed scores of six examples can range from six (all 1s) to 42 (all 7s) per student. When a percentage is indicated, it refers to either a percent of the total scores, individual or group, or a percent of change from pre-test to post-test.

Results of Main Effect

Tables 4-1, 4-2, 4-3, 4-4, and 4-5 present the results for the main effect from as many different data positions possible in an effort to understand all that the data reflects. Because the change in mean score from pre-test to post-test is small, to allow a visible comparison between the control and experimental group, both mean score changes may be included in each chart.

The primary focus at this point was to observe the measurements and to determine the effect of the treatment on each subject or group of subjects. As can be seen in Table 4-1, the split-plot analysis of variance (ANOVA) failed to indicate any statistical significance for the interaction, the main effect. The difference in mean scores between the control and experimental groups were similar, as was the change in score from the pre-test to the post-test: $F(660, 1) = .385$, for a probability of $p = .55$.

It is interesting to note that all mean score changes were in the negative direction. Furthermore, the data suggest that some influence occurred: Nine out of thirteen major groups indicated a greater change in the experimental groups than the control groups.

Experimental group subjects who indicated the greatest change in preference were either those with no school musical ensemble experience (band, orchestra, choir), those with below average family income level, those who were A or B students, or those of non-Caucasian ethnicity. See Appendix O for details regarding musical experience.

Table 4 -1. Change in mean score of experimental and control groups and significance level as determined by split plot analysis of variance (ANOVA)

Major groups.	N	Control grp. score change	Expr. grp. score change	Interaction Signif.
All - main effect	661	-0.4	-.70	p = .55
All females	352	-0.9	-.85	p = .92
All males	309	0.3	-.66	p = .30
All Caucasian	345	0.2	-.51	p = .40
All non-Caucasian	316	-1.0	-1.04	p = .97
All 5th grade (11 groups: 7 exp., 4 con.)	169	0.4	-1.00	p = .64
All 6th grade (26 groups: 13 exp., 13 con)	492	0.4	-.65	p = .72
All with academic grades of A & B	230	-1.2	-1.40	p = .65
All with academic grades of C and below	431	-0.9	-.30	p = .73
All from below average income families	326	-1.1	-1.20	p = .88
All from above average income families	335	0.5	-.37	p = .91
All with school ensemble experience	397	-0.1	-.18	p = .75
All with no school ensemble experience	264	-1.0	-1.70	p = .44

Within-factors—pre-test to post-test. Between-factors—exper. and contr. groups.

For the sake of conciseness and brevity the data in Table 4-2 reflect the mean changes and significance levels of certain specific sub-groupings of subjects with a p=.50 or less. Again, using a split-plot ANOVA, the data indicate no statistical significance in mean score results regarding any of the sub-categories.

The indicated score change in both tables represents an average for all six items: Divide this average by 6 for the average change for any one example. Again, most of the changes occurred in the negative direction, as indicated in the more detailed analyses found in Appendix L, Tables L-1 through L-8.

Table 4-2. Change of mean score and significance level of various subgroups determined by split plot analysis of variance (ANOVA)

Sub-groups	N	Con. grp. score change	Exp. grp. score change	Interaction signif.
All—With orchestra experience	90	-1.36	.65	p = .24
All—With school ensemble. exp. and Caucasian	236	0.75	-.09	p = .43
All—With no sch. ensemble exp. and academic grades of A and B	102	-0.66	-.36	p = .18
All—Males from higher income families	163	0.98	-.22	p = .32
All—Males involved in school ensembles	166	0.63	-.43	p = .37
All—With school mus. ensemble exp. and academic grades of C and below	269	0.62	-.10	p = .46

Within-subjects: Pre-test to post-test; Between-subjects: Exp.and cont. groups.

Table 4-3 involves only the experimental group. A split-plot ANOVA involves the change in score as the within-factor, but uses different categorical sub-group variables as the between-factor. The table also refers to the second null-hypothesis and its sub-hypotheses: Without regard to the control group, there is no significant change in preference scores of the experimental group or sub-groups alone.

Table 4-3. Significance levels using a repeated-measures ANOVA for experimental groups alone

Group	Applicable Null	F-Score	Interaction significance
Entire exp. grp. (no between factor)	NH 2.0	F(1, 353) = 3.500	p = .06
Gender	NH 2.1	F(1, 353) = 0.051	p = .82
Musical experience	NH 2.2	F(1, 353) = 3.460	p = .06
Economic level	NH 2.3	F(1, 353) = 1.100	p = .29
Ethnicity	NH 2.4	F(1, 353) = 0.400	p = .52
Grade achievement level	-na-	F(1,353) = 1.400	p = .22

Within-factor—score change ; Between-factor—different categorical variables

In a further exploratory manner, tables 4-4 and 4-5 are t-test summary tables investigating the conditions associated with the predominantly small interactions. Table 4-4 presents another comparison of the mean changes, direction, and levels of significance of all sub-groups. The responses by both experimental and control groups were treated independently: A paired sample t-test was used to determine the level of significance. Regardless of groupings, the significance levels of the experimental subjects were consistently lower than those of the comparable control groups. As before, scoring is from 1 to 7 per item for six treatment examples. Divide the total by six to determine the amount

Table 4-4. Comparison of mean score changes of various subgroups of the experimental group and control group treated independently by a paired sample t-test.

Variable	Subgroup	N	Control pre to post mean chg.	Control group sig.	N	Exper. pre to post mean chg.	Exper. group sig.
General effect	All	307	- 0.4	.41	354	- 0.8	.06
Gender	Male	139	0.3	.72	169	- 0.7	.23
	Female	168	- 0.9	.14	185	- 0.9	.15

Table 4-4. Continued

Variable	Subgroup	N	Control pre to post mean chg.	Control group sig.	N	Exper. pre to post mean chg.	Exper. group sig
Grade achievmnt.	A's & B's	101	-1.0	.28	130	-1.4	.03
	C's & lower	206	- 0.1	.82	224	- 0.4	.46
Grade level	5th grade	59	- 0.4	.71	110	-1.0	.20
	6th grade	248	- 0.4	.46	244	- 0.7	.17
Economic level	Lower income	167	-1.1	.07	159	-1.3	.04
	Higher income	140	0.5	.51	195	- 0.4	.44
Ethnicity	Caucasian	158	0.2	.73	187	- 0.6	.38
	Non-Caucasian	147	- 0.9	.10	167	- 0.6	.06
Musical experience	Ensemble expr.	174	0.1	.92	224	- 0.2	.70
	No ens. expr.	133	-1.0	.17	130	-1.7	.02
Listen pref: most &/or next	Classical	54	-3.5	.01	63	-3.0	.01
	All other	253	0.3	.61	291	-0.3	.50
Family influence	Classical	19	-2.9	.21	30	-1.5	.29
	All other	288	- 0.2	.64	324	- 0.7	.10

of average change per example. Appendices J and L (Table L-8) present a more complete analysis.

As a continued exploration of the effects of the experimental treatment on various groups, table 4-5 is an examination of the mean changes, direction, and levels of significance of mean score changes between the fifth and the sixth grade experimental groups. Again the data reflects a mean shift mainly to the negative. In addition, there appears to be some significant differences in mean score change with regards to ethnicity and family income levels.

Table 4-5. Fifth- and sixth-grade experimental group comparison by a split-plot ANOVA (score x class grade)[a] and amount of mean change with related t-test

Sub-group	Split-plot ANOVA F score and interaction significance	Fifth-grade (N=110)			Sixth-grade (N=244)		
		N	Change	t-test p	N	Change	t-test p
Males (score * class grade)	F(1, 167) = .625, p = .43	54	- 1.3	.20	115	- 0.40	.58
Females	F(1, 183) = .024, p = .88	56	- 0.7	.55	129	- 0.90	.18
Music experience	F(1, 222) = .478, p = .49	68	- 0.7	.42	156	0.01	.95
No musical experience	F(1, 128) = .064, p = .80	42	- 1.5	.31	88	- 1.90	.02
Above ave. income	F(1, 193) = 6.42, p = .01	40	- 3.1	.03	155	0.30	.57
Below ave. income	F(1, 157) = 4.28, p = .04	70	- 0.2	.85	89	- 2.40	.005
Caucasian	F(1, 185) = 4.12, p = .04	52	- 2.4	.05	135	0.20	.74
Non-Caucasian	F(1, 165) = 2.99, p = .08	58	0.3	.78	109	- 1.70	.01
A and B students	F(1, 127) = .007, p = .94	43	- 1.4	.27	86	- 1.50	.06
C and below students	F(1, 223) = .251, p = .62	67	- 0.7	.44	158	- 0.20	.72

[a] - Within-factor—score(pre to post); Between-factor—class grade (5th or 6th)

Preferences for Listening Examples

Tables 4-6 and 4-7 present the responses to each example (as a percentage) by all participants (661) to the listening section of the pre-test. The even-numbered listening examples in table 4-6 are musical examples similar to those of the experimental treatment, and indicate a mean preference rating of 3.16 for all examples. In other words, the subjects reflect a slightly negative attitude towards concert style music: They would not voluntarily elect to listen to that musical style.

Table 4-6. Preferences toward concert examples as a percentage of all subjects (661) toward each of the pre-test concert style examples

				Percentage preference level					
Item Number	1	2	3	4	5	6	7	M	SD
#2—Mozart	16	18	18	20	10	9	9	3.5	1.8
#4—Strav.	22	20	17	20	11	6	4	3.0	1.7
#6—Mozart	18	22	19	18	9	7	7	3.3	1.8
#8—Haydn	24	21	17	15	9	7	7	3.1	1.8
#10—J.S.Bach	24	22	17	15	9	5	8	3.1	1.8
#12—Tchaik.	28	22	13	15	7	8	7	3.0	2.0
Average	22	21	17	17	9	7	7	3.16	---

The data also indicate that of the various styles of art music represented, the subjects show a slight preference for the classic style, in this case, the Mozart examples (#2, #6).

Table 4-7, the odd-number listening examples are the distractors representing several different popular styles. It is interesting that the students show greater extremes in preference with regard to their likes and dislikes toward popular music, music about which they exhibit "ownership". It appears that the students have a strong liking for rhythm and blues (R& B) : 69% score sixes and sevens, a mean response of 5.8 and a strong dislike for country or theater music: 70 % score ones and twos, with a mean of 2.0. Appendix J presents a more complete presentation of attitudes toward the distractors and Appendix P expresses details regarding student and family listening habits.

Table 4-7. Preference towards distractor examples as a percentage of all subjects (661) toward each pre-test distractor example.

				Percentage preference level					
Item Number	1	2	3	4	5	6	7	M	SD
#1—Country	52	18	10	9	5	2	4	2.2	1.16
#3—R & B	3	3	4	8	12	22	47	5.8	1.16
#5—Theater	58	21	9	7	2	2	1	1.8	1.21
#7—R & R	27	19	12	19	11	8	4	3.0	1.82
#9—Jazz	20	15	15	20	14	9	7	3.5	1.83
#11—Hispanic	24	14	15	18	12	10	7	3.4	1.92
Average	31	15	11	13	9	9	12	3.3	---

Tables 4-8 and 4-9 present further comparisons of the experimental groups' pre-test responses and post-test responses to each of the listening items. Again, the responses indicate a very slight negative shift, although example eight, music by Haydn, increases to the same level of enjoyment as the other classical period examples, (#2 and #4).

It is interesting to note that examples #4 (Stravinsky) and #10 (J.S.Bach), the most musically complex of all of the musical items, are generally least liked. Data in Table 4-9 reflect a comparison between the experimental group, control group, and the total of the four groups with the greatest positive shift.

Table 4-8. Pre-test and post-test score preference comparisons of experimental group expressed as a percentage at each preference level (n = 354)

					Preference Level					
Example		1	2	3	4	5	6	7	Mean	SD.
2. Mozart	Pre-test	17	18	16	19	11	10	9	3.5	1.8
	Post-test	16	20	13	25	12	9	6	3.4	1.7
4. Stravinsky	Pre-test	23	19	16	18	12	7	4	3.1	1.7
	Post-test	23	19	22	18	9	7	3	3.0	1.6
6. Mozart	Pre-test	18	21	18	18	9	8	9	3.3	1.8
	Post-test	23	19	14	24	10	7	5	3.2	1.7
8. Haydn	Pre-test	23	19	16	15	11	10	6	3.2	1.8
	Post-test	20	18	17	20	12	7	6	3.3	1.8
10. Bach, J.S.	Pre-test	25	20	17	15	9	6	8	3.1	1.8
	Post-test	28	19	16	20	8	5	5	3.0	1.7
12. Tchaikovsky	Pre-test	27	20	14	16	6	9	9	3.1	1.9
	Post-test	30	18	12	19	11	4	5	3.0	1.8
Score Average	Pre-test	22.2	19.5	16.2	16.8	9.7	8.3	7.5	3.22	1.8
	Post-test	23.3	18.8	15.6	21.0	10.3	6.5	5.0	3.15	1.7

[1] Preference Level: 1. (Don't Like At All) 4. (Neutral) 7. (Really Like It A Lot)

Table 4-9. Pre-test to post-test mean preference level shift and a comparison measured on the 7-point Likert scale

	Experimental Group (N = 354)			Control Group (N = 307)			Four Positive-shift Groups (N = 58)[a]		
Listening Example	Pre-test	Post-test	Shift	Pre-test	Post-test	Shift	Pre-test	Post-test	Shift
1. Country	2.1	2.3	0.2	2.2	2.2	0.0	2.1	2.2	0.1
2. Mozart	3.5	3.4	-0.1	3.4	3.3	-0.1	3.4	3.9	0.5
3. R&B	5.9	5.9	0.0	5.6	5.7	0.1	5.8	5.8	0.0
4. Stravinskii	3.1	3.0	-0.1	3.0	3.1	0.1	3.0	3.6	0.6
5. Theater (West Side)	1.8	1.9	0.1	1.7	1.8	0.1	1.7	2.0	0.3
6. Mozart	3.3	3.2	-0.1	3.2	3.0	-0.2	3.2	3.5	0.3
7. Traditional R and R	3.1	3.1	0.0	3.1	2.9	-0.2	3.2	3.4	0.2
8. Haydn	3.1	3.3	0.2	2.9	3.1	0.2	3.0	3.7	0.7
9. Jazz (Ensemble)	3.5	3.7	0.2	3.4	3.3	-0.1	3.3	3.8	0.5
10. J.S.Bach	3.1	3.0	-0.1	3.0	2.8	-0.2	2.9	3.4	0.5
11. Hispanic (Salza)	3.4	3.3	-0.1	3.4	3.2	-0.2	3.0	3.0	0.0
12. Tchaikovsky	3.1	3.0	-0.1	2.8	2.8	0.0	3.1	3.3	0.2

[a] The four top positive-shift groups are (6,7), (4,2), (6,8), and (1,2)

School and Group Comparisons

The purpose for school comparisons and intact group comparisons is to identify general characteristics that are associated with those schools or specific classroom groups. Specific schools, #4 and #6, and groups that exhibited the more notable positive or negative shifts in preference, (4,2), (2,3), (1,2) are further examined and discussed. These comparisons are intended help identify potential features necessary for future programs of passive listening. Each classroom group is designated by two integers, (x,y): The 'x' is the number of the school and the 'y' is the number of the group within that school.

Table 4-10. Comparison of fifth-grade total, school, and individual group pre-test to post-test scores, score differences, and percentage change

	Experimental groups					Control groups			
Grp.	pre-test	post-test	diff .	(% chg)	Grp.	pre-score	post-score	diff.	(% chg.)
All 5th	2231	2102	-111	(- 4.9)		1121	1099	-22	(-1.9)
ES 3	815	732	-83	(-10.1)	----	437	434	3	(-0.006)
3,1	499	440	-59	(-11.8)	3,2	135	135	0	(0.000)
3,3	316	292	-24	(-7.5)	3,4	302	299	-3	(-0.009)
ES 4	840	851	11	(1.3)	Not Appl.—All groups are experimental.				
4,1	237	217	-20	(-8.4)					
4,2	389	433	44	(11.3)					
4,3	214	201	-13	(-6.0)					
E S 5	558	519	- 39	(-6.9)	----	685	664	- 21	(-3.100)
5,3	267	277	10	(3.7)	5,1	300	327	27	(.090)
5,4	291	242	- 49	(-16.8)	5,2	385	337	- 48	(-12.400)

(3,1) means school 3, group or class-group 1 and 4,2 means school 4 and group 2.
All groups in elementary school four are experimental groups.

Table 4-10 shows a comparison of the fifth-grade school and individual class-group preference score changes from the pre-test to the post-test. Table 4-11 indicates the same of the sixth-grade middle school groups. The pre-scores and post-scores are the totals of all students in the experimental or control groups.

The large differences in raw scores between both fifth-grade and sixth-grade class-groups are due to there being more sixth grade groups and larger sixth grade classes.

Table 4-11. Comparison of sixth-grade total, school, and individual group scores, score differences, and percentage change

	Experimental groups					Control groups			
	Pre-score	post-score	diff.	(% chg.)		Pre-score	post-score	diff.	(% chg.)
All 6th	4738	4578	-160	(-3.3)		4599	4500	-9	(-2)
MS 1	1891	1866	-25	(-1.3)	----	1962	2026	64	(3.0)
1,1	353	333	-20	(-5.6)	1,6	357	358	1	(0.003)
1,2	349	440	91	(26.0)	1,7	428	445	17	(3.9)
1,3	424	389	-35	(-8.2)	1,8	336	345	9	(2.7)
1,4	437	435	-2	(-0.004)	1,9	453	471	18	(3.9)
1,5	328	269	-59	(-.17.9)	1,10	388	407	19	(4.8)
MS 2	1335	1086	-249	(-18.0)	----	1239	1064	-175	(-14.0)
2,3	429	290	-139	(-32.4)	2,1	291	243	-48	(-16.4)
2,4	335	296	-39	(-11.6)	2,5	292	270	-22	(-7.5)
2,8	336	341	-25	(-7.4)	2,6	293	246	-47	(-16.0)
2,2	205	159	-46	(-22.4)	2,7	363	305	-58	(-15.9)
MS 6	1512	1626	114	(7.5)	----	1398	1412	14	(1.0)
6,5	285	291	6	(2.1)	6,1	501	569	6	(1.1)
6,6	257	258	1	(0.003)	6,2	268	233	-35	(-13.0)
6,7	417	451	34	(8.1)	6,3	251	244	-7	(-2.7)
6,8	553	627	74	(13.4)	6,4	378	365	-13	(-3.4)

Table 4-12. Comparison of the four highest and four lowest experimental group gain scores as a percentage

Listening	Group negative change (%)				Group positive change (%)			
test example	MS Grp (2,3)	ES Grp (3,1)	MS Grp (1,5)	ES Grp (5,4)	MS Grp (6,7)	ES Grp (4,2)	MS Grp (6,8)	MS Grp (1,2)
2. Mozart	- 38	- 13	- 23	- 18	6	5	20	19
4. Stravinsky	- 42	- 3	- 2	- 37	26	6	18	29
6. Mozart	- 22	- 10	- 20	- 6	- 1	8	5	27
8. Haydn	- 25	0	- 12	- 11	11	11	18	33
10. Bach	- 17	- 29	- 35	0	3	16	20	29
12. Tchaikovsky	- 50	- 12	- 6	- 28	5	5	1	20
Average percent chg.	- 32	- 12	- 16	- 17	8	9	14	26

Table 4-13. Demographic comparisons of four highest and four lowest groups measured in numbers of students of the four greatest positive and negative scoring experimental groups from pre-test to post-test

		Four most negative scoring groups					Four most positive scoring groups				
Demographic variable	division	(2, 3)	(1, 5)	(3, 1)	(5, 4)	Total	(6, 7)	(4, 2)	(6, 8)	(1, 2)	Total
Number of participants in each class group:		16	17	21	14	68	20	19	28	23	90
Gender	Male	6	9	10	7	32	14	8	14	10	46
	Female	10	8	11	7	36	6	11	14	13	44
Musical experience*	Yes	6	10	18	7	41	18	15	23	12	68
(band, choir, orch.)	No	10	7	3	7	27	2	4	5	11	22
Ethnicity	Caucasian	6	12	11	11	40	12	4	20	6	42
	Non-Caucasian.	10	5	10	3	28	8	15	8	17	48
Grade achievement*	A's and B's	11	12	2	6	31	3	8	2	6	19
	C's and less	5	5	19	8	37	17	11	26	17	71
Family income level*	High	5	12	14	9	40	18	4	22	16	60
	Low	11	5	7	5	28	2	15	6	7	30

* Notably different demographic splits for those indicating a positive change in preference

Data from both Table 4-10 and Table 4-11 indicate that with the exception of elementary school #4, and middle school #6, all other schools experienced a negative result of passive listening on musical preference toward selected examples of classical music.

Table 4-12 and 4-13 are two comparison charts of the four groups exhibiting the greatest negative change and the four groups exhibiting the greatest positive change. Table 4-12, an item response comparison, other than the fact that the four negative groups responded much stronger than the four positive groups, indicates very little of comparative importance between any groups or any examples.

Results of Table 4-13 indicate no major definitive characteristics or attributes between the eight groups that could act as a good predictor of a negative or positive shift. However, among those indicating a positive change, there is a minor but notable difference in numbers between students from families of higher than average and lower than average income, students with higher and lower grades, and students who have and have no musical ensemble experience.

The overall positive score of school #4, as indicated in Table 4-10, was due to the high positive score of one class in particular, group (4,2). From classroom observation, and an interview with the principal and teacher, the following characteristics reflect those of that group, the teacher, and classroom:

1. The relationship between the teacher and class seemed positive and respectful.
2. The students enjoyed the teacher.
3. The teacher was vivacious and happy, exuding a sense of enjoyment of the class.

4. The teacher effortlessly commanded a great sense of discipline: The students were well-behaved. They entered and left the portable in a quiet and orderly manner.
5. The teacher was constantly engaged with the students, applying Kagan structures.
6. Although the classroom was in a portable, it seemed comfortable and quiet.
7. The room was well organized as a set-up for Kagan cooperative learning.
8. The teaching environment appeared colorful and creative, but not busy and distracting.

Spencer Kagan's Theory of Cooperative Learning is a type of learning strategy that emphasizes children becoming independent learners by promoting individual accountability and independent thinking. A "structure" is an activity usually involving a physical grouping of students, a learning challenge such as a question or debatable issue, and the opportunity to express their opinions as a group usually by an elected spokesperson. Kagan's learning structures embrace Howard Gardner's Theory of Multiple Intelligences as well as Gary Lamb's Music for the Classroom, a tempo based theory of background music involving new-age genre music.

In contrast, group (4,1) is an ESE class with all the typical challenges that students with emotional and learning disabilities bring to the classroom. Disciplining the students seems to have taken up a great part of the teaching time, creating a fair amount of tension, frequently resulting in negative feelings between the class and the learning situation. The students were considerably more noisy and disruptive, especially upon entering and exiting the classroom and during "quiet times".

Group (4,3) is a regular homogeneous classroom with an average negative change of score and reflected the following characteristics:

1. Considerable chaos before and after class.
2. Room appeared disorderly and visually distracting: Very little order to the physical surroundings.
3. Teacher was not demanding, did not seem to challenge the students.
4. Teacher was liked by the students.
5. Teacher did not engage the students for most of the observation: Remained seated at desk and graded papers while the class functioned with little focus, insufficient direction, and distracting chat while several tried to work.

Middle school #6, a science and technology magnet school had the largest change in preference score of all schools. It is the only school that scored a positive change in preference by all groups. By observation and interview of the teachers in school # 6, the following were the most obvious consistent classroom characteristics:

1. Students were well behaved and are reasonably quiet during entry and exit in the classroom: Being a magnet school, discipline problems are only a minor issue and very few referrals are written.
2. Parents of all students were required to sign a pledge to assist in their child's education and occasionally to be an active part of normal classroom activities.
3. There seemed to be a strong sense of pride and positive school attitude in both teachers and students as evidenced in their verbal and physical behaviors.
4. The classrooms were very clean and well organized: Kagan cooperative strategies were commonly used.
5. The teachers visibly enjoyed each other and worked very closely together.
6. There was a strong sense of mutual respect between the teachers and the students.
7. All teachers seemed to enjoy the students and spoke very enthusiastically and in a positive manner about them.
8. All teachers, especially of group (6,8) were extremely engaging with the students, constantly roaming the room and assisting solving problems.

9. Students seemed to adhere to the dress code without complaint.

10. All teachers used music in their normal teaching routine.

Middle school #2 scored the lowest of all schools, and group (2,3) scored the lowest of all groups. Again, by observation and interviews with the principal and vice-principal, the following school conditions were indicated:

1. This school has many discipline problems on a daily basis.
2. Students come to school acting unruly, noisy, demonstrating poor personal discipline.
3. Eighty-two percent are on free or reduced lunch.
4. There seems to be a sense of low self-esteem as evidenced in their inappropriate talk (crude and negative) and dress

Group (2,3) scored about four times lower than the average negative scoring class-group. The conditions associated with this specific group and surroundings are as follows:

1. Students entered and exited the classroom in excessively noisy manner.
2. Students were rude and disrespectful to each other, making unkind and negative personal comments.
3. There was a lack of respect shown between the students and the teacher.
4. The teacher seemed basically unsure of himself/herself and appeared unhappy with the class.
5. The teacher was weak in areas of discipline and appeared unable to command the students effectively.
6. The teacher was not engaged with the students the majority of the time, but rather sat at his/her desk doing lesson plans at that particular time.
7. The teacher did not appear to enjoy his/her students, and the students, by their actions, did not appear to enjoy the teacher. The students said and did things to irritate him/her, and the teacher obliged them in a reactive and educationally unproductive manner.

Middle school group (1,2) scored the highest shift of all experimental groups of the project and was the only positive gain score of all ten groups in that particular school. Demographically there was nothing unusual about it. After a lengthy discussion with the sixth-grade team leader at middle school #1, no explanation could be uncovered other than the students must have been feeling especially good the day of the post-test. There was a suggestion that the students would have felt particularly elated, having just come from a class which they disliked intensely due to a recurring negative teacher-pupil relationship. They were more than ready now to learn or enjoy "something", especially a music survey since it was "fun". The troubled teacher was reassigned to another school the following year.

Characteristics of Positive Gain Respondents

In all cases the main effect was not significant. There were many, however, who shifted their preferences at least to a small degree in the positive direction. It seems prudent to examine these individuals in search of some identifiable characteristics which may be associated with this style of learning.

Table 4-14. Summary comparison between students who shifted positive and those who shifted negative in the control group and experimental groups

Negative shift				Positive shift		
Group	N	Pt. shift	ave. per subject	N	Pt. shift	ave. per subject
Experimental	199	-1150	-5.8	155	879	5.7
Control	171	-121	-0.7	136	881	6.5

Table 4-14 compares the experimental and control groups with regard to both the positive and negative change in preference. The most interesting aspect of this comparison is that the two groups' results were the opposite to each other. Appendix K (Table K-3) contains a complete positive shift demographic comparison between the experimental and control subjects.

Of the 661 research participants, 291 (44.1%) demonstrated a positive shift in preference between the pre-test and the post-test . Of these subjects, 155 (43.7%) were in the experimental group and 136 (56.3%) were in the control group.

Table 4-15 presents an experimental group comparison of six major variables. Socio-economic status is implied by participation or non-participation in the free or reduced lunch program. The achievement grades are either high (A & B students) or low C and below). Ethnicity is described as either Caucasian or Non-Caucasian. Musical experience is determined by membership in a school choir, band, or orchestra. All measurement is expressed in a percentage.

Table 4-15. Demographic comparison by percent between positive and negative respondents of experimental group.

Demographic Variable	All subjects (N=354)		Positive respondents (N=155)		Negative respondents (N=199)	
Gender	52 Female	48 Male	54 F	46 M	51 F	49 M
Class grade	32 5th	68 6th .	27 5th	73 6th	34 5th	66 6th
SES	45 Low	55 High	38 Low	62 High	50 Low	50 High
Achiev. Grades	63 Low	37 High	68 Low	32 High	60 Low	40 High
Ethnicity	52 Cauc.	48 NonC.	57 C.	43 NonC.	50 C.	50 NonC.
Music exp	37 No	63 Yes	26 No	74 Yes	55 No	45 Yes

Table 4-16 is an analysis of positive-shifting experimental group responses to the concert style examples. The data indicate a fairly clear difference in shift between the concert style examples (#2,#6, #8) and the others.

Table 4-17 is a similar analysis of the responses to the distractor examples. In both tables, with the exception of rhythm and blues, there were positive mean gains with all items. However, responses to the concert musical style examples showed a greater change, albeit small, than with the distractors.

Table 4-16. Analysis of experimental group positive shift respondents (N=155) to the concert examples from pre-test to post-test.

	Pre-test		Post-test .		Mean	%
Item Number	M*	Sd	M*	Sd	Change	Change
# 2 - Mozart	2.9	1.6	3.9	1.6	1.0	32
# 4 - Stravinsky	2.6	1.6	3.4	1.6	0.8	30
#6 - Mozart	2.7	1.5	3.7	1.6	1.0	37
# 8 - Haydn	2.7	1.6	3.8	1.7	1.1	40
#10- J. S. Bach	2.5	1.5	3.4	1.7	0.9	36
#12 - Tchaikovsky	2.5	1.5	3.4	1.8	0.9	36
Average	2.6	---	3.5	---	0.94	34.6

Table 4-17. Analysis of experimental group positive shift respondents (N=155) to the musical distractor examples from pre-test to post-test.

	Pre-test		Post-test		Mean	%
Item Number	M*	Sd	M*	Sd	Change	Change
#1 - Country	1.9	1.3	2.4	1.5	0.5	26
#3 - R & B	6.6	1.4	6.0	1.3	- 0.6	- 9
#5 - Theater	1.6	1.1	2.0	1.2	0.4	25
#7 - R & R	3.0	1.8	3.4	1.9	0.4	13
#9 - Jazz	3.2	1.8	4.0	1.7	0.8	25
#11 -Hispanic	3.1	1.9	3.2	1.8	0.1	3
Average	3.2	---	3.5	---	0.26	16.8

Teacher Attitude Survey

An exit instrument, the Teacher Attitude Survey was administered to each of the 18 experimental group teachers. A Likert scale was used for scoring the responses, that ranged from '1' (very strongly disagree) to '7' (very strongly agree). Appendix C presents the entire survey and Appendix K (Table K-2) contains the statistical results in terms of percentage of teachers answering at each preference level as indicated by a Likert scale. The following is a summary of the survey results.

According to the teachers' observations and impressions, the background music had certain effects on the students:

1. Approximately 93% agree that the use of quiet background passive listening had a calming effect with the students and themselves.

2. Approximately 22% felt that the background music distracted the students away from proper focus.

3. Approximately 79% experienced a positive change in student behavior during the experimental treatment.

4. Approximately 30% experienced student interest in the background music by their asking questions or physically acting-out with toe or pencil tapping.

5. Approximately 20% experienced student concern about the absence of the background music after the treatment period ended.

The teachers held a variety of personal opinions regarding the value of playing music in the background.

1. Approximately 50% found background music distracting while teaching a lesson.

2. Approximately 20% found the music distracting during events such as student conferencing or paper-grading.

3. Approximately 15% never really liked using the background music whether or not they enjoyed classic style music.

4. Approximately 15% of the teachers do not enjoy classic style music.

5. Approximately 72% enjoyed the music and enjoyed sharing it with their students.

6. Approximately 83% would consider continuing using background (passive) concert music in their teaching routine to a greater extent than they have up to this point.

The teachers held certain impressions about the results of the experimental treatment.

1. Nearly 67% felt that although unmeasurable, the background music encouraged greater critical thinking, the use of higher order thinking skills.

2. Nearly 88% believed that exposing students to classic style music will "make a difference" in some regard.

3. Over 90% felt that their students receive little exposure to music of artistic substance and that studies like this one have strong merit.

Conclusion

Four main issues were measured and reported. The main effect of the treatment was measured and found to be statistically insignificant. The second issue was to measure and compare the respondents opinions to each listening example. This was accomplished by viewing the results as a percentage response to each item. A comparison was made between the treatment examples (even numbered items) and the distractors (odd numbered items). The third issue involved examining and comparing the characteristics of those subjects or groups in the experimental treatment group exhibiting a positive shift in preference from the pre-test to the post-test. Finally, a teacher attitude survey was administered for the purpose of determining teaching/teacher attributes that might be associated with groups scoring in a positive or in a negative direction. In several instances, an examination of subgroups was performed in an effort to identify characteristics that could be identified with shifting preference. In some of these cases, a paired t-test was used because usually there was no between-group factor.

CHAPTER 5
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this research was to determine to what degree a program of passive listening as background music during normal classroom activities would affect the musical preferences of fifth-grade and sixth-grade students.

Summary

Previous research in the area of musical preference has focused on active listening such as listening with explanation and direction, research with college-age participants, controlled laboratory conditions with testing of individuals or in small numbers, and a somewhat shorter treatment period (Finnas 1986). Other related research in the area of background stimuli concerned below-conscious level (subliminal) conditions resulting in preference change involving visual stimuli or memorization of grammar chains (Bornstein 1989). The latest related research involves what has been variously termed the "mere exposure effect", implicit learning, implicit memory, and priming (Murphy, Monaham, and Zajonc 1995; Seaman et al. 1998).

Fifth- and sixth-grade students were selected for this study due to relatively few studies at these grade levels. Six schools were selected based on receiving an A or B in the Florida state evaluations in 2001, willingness on behalf of the principals and teachers to participate, and the student body that was reasonably representative of Polk County, Florida Schools. Twenty experimental groups (total of 354 students) and seventeen control groups (total of 307 students) were determined by convenience. The experimental groups were at first determined by a flip of a coin; however, the final decision was based on the teachers' attitudes toward the project. If a selected experimental-group instructor was reluctant to use music to any extent in their class procedures, they were conveniently replaced by one who felt more comfortable. The teachers, grade level chairperson, and researcher thoroughly discussed the project.

There were no significant differences between the overall experimental and control groups. The study included 309 males and 352 females, and the ethnic distribution was similar between groups and was close to that of Polk County. Based on a 4.0 grading system, the average GPA of the experimental group was 2.20 and of the control group was 2.12. SES levels were determined by examining the free or reduced lunch program: 55% of the experimental group were in the upper income level in comparison to 46% of the control group.

All participants completed an author-designed pre-test/post-test. The first part of the test was a demographic survey that was primarily completed by the students. The researcher consulted the homeroom teacher with regard to grades and the cafeteria supervisor with regard to the free or reduced-cost lunch program. The second part of the test consisted of twelve examples: The six even-numbered items were of classical/concert style music similar to that of the experimental treatment, and the six odd-numbered items were distractors consisting of differing types of popular music. Subjects responded to a seven-point Likert-type scale that ranged from 1 (do not like at all) to 7 (Like it a lot). The post-test consisted of the same twelve listening examples.

Data were collected at the conclusion of each group testing. Names were required on the test sheets to assure a connection between the two measures and for future data entry. To assure confidentiality, at the completion of all data entry, each student was assigned a number. A research assistant entered raw data on a data summary sheet. The researcher, however, made all entries into an SPSS file.

The experimental treatment consisted of softly playing concert ("classical") style music for between 60 and 90 minutes per week. This was accomplished before and after class, during quiet reading times, or even while material was being presented or discussed, depending upon the teacher's instructional style. Four CDs were recorded and distributed (one each month) to the twenty experimental group teachers.

At the conclusion of the study, an author-developed questionnaire was administered to all experimental group teachers. This survey consisted of 24 questions answered on a seven-point Likert-type scale ranging from 1 (very strongly disagree) to 7 (very strongly agree).

The researcher also consulted with the teachers representing several of the greatest positive-gain groups and greatest negative-gain groups, the grade level chairpersons, and the respective school principals. The results of the interviews were then organized and summarized.

Conclusions.

The first two research questions related in Chapter 1 are:

1. To what degree does a program of passive listening affect the musical preferences of fifth-grade and sixth-grade students?
2. Within each grade level, are there identifiable unique subgroups that measurably demonstrate a significant change of musical preference? Is there a significant difference in amount of score change between the grade levels?

An examination of the three null hypotheses addresses these first two research questions. The first null-hypothesis concerned the main effect of the experimental treatment on the change of musical preference scores of the experimental group as compared to the control group. The results of a split-plot ANOVA did not support that hypothesis; therefore, null-hypothesis 1.0 is accepted.

In a closer examination of the data as found in Appendix L (Table L-1) with regard to the subcategories of null-hypothesis 1.0, the interaction of score and experimental/control groups also failed to reflect a significant change with regard to either gender (NH 1.1), having musical experience in a performance ensemble (NH 1.2), being from higher or lower income families(NH 1.3), or ethnic background as Caucasian or non-Caucasian (NH 1.4). Therefore, this particular treatment of passive listening did not significantly change the preference level of the experimental group or any group or subgroup. However, a comparison of means change between the experimental and control groups (Table 4- 4) shows a slightly greater negative/positive shift with those receiving the experimental treatment.

The second null hypothesis (NH 2.0) states that there is no significant change in the preference scores of the experimental group. The results of a repeated-measures ANOVA without a between-subjects factor is $F(1, 352) = 3.50$, $p = .062$. The data also indicate no significant change in the subgroups. Therefore, NH 2.0 and all subgroup null hypotheses are accepted. Because there is no control group with which to compare, and the data indicate an insufficient level of statistical significance, it is at best speculative to assert that the experimental treatment is at all responsible for any change in the students' scores. However, 91.2% of the experimental subjects did indicate a change in preference in both the positive and the negative directions. This will be examined in the discussion section.

The third null-hypothesis states that there is no significant difference in the change of musical preference scores between the fifth-grade and sixth-grade experimental groups. A split-plot ANOVA supports this claim; therefore, the null hypothesis (NH 3.0) is also be accepted [F(1, 352) = .159, p = .69]. See Appendix L (Table L-8).

Each subcategory of NH 3.0 was examined using both the repeated-measures ANOVA and paired t-test. The results indicated little difference between the fifth-grade and sixth-grade students regarding gender (NH 3.1): Both males and females responded to the passive music similarly. Little difference was reflected with regard to students with musical experience (NH 3.2). With regard to economic standing (NH 3.3), fifth-grade students from above-average income families, and sixth-grade students from below-average income families showed a significant change in scores. Similarly, the data indicate that fifth-grade Caucasians and sixth-grade non-Caucasians made significant changes in score (NH 3.4). This will be examined in the discussion.

The fourth research question involves examining the common characteristics of those participants in the experimental groups who exhibited a positive change in musical preference. The following is a summary of these respondents:

1. Gender, grade, and ethnicity had no bearing on preference change.
2. There is a 66% chance of the student being a C or below student in academics.
3. There is about a 66% chance that the student is from an above-average income family.
4. There is about a 75% chance of having received school music ensemble experience.
5. There is an 80% chance of being a rock music enthusiast.
6. There is a 90% chance of coming from a family that primarily listens to everything but concert style music.

The fifth research question in part concerned an evaluation of the personal and classroom characteristics of the teachers of the groups that reflected a positive score-change.

1. They were very positive and nurturing with the students.
2. They were very friendly, approachable, and outwardly cheerful.
3. They had a close but respectful relationship with their students.
4. They had strong class discipline and high expectations for compliance.
5. They teachers were very creative in their approach to their teaching as well as their classroom environment: Their rooms were very cheerful and "upbeat."
6. They teachers demonstrated a comfortable vocal quality.
7. They teachers had experienced Kagan Training and used techniques of Cooperative Learning with their students.
8. They teachers had previously used background music of different styles.
9. They teachers appreciated and enjoyed classic style music.
10. They teachers used the CDs at least as much as the research plan required.

Discussion

Tests of statistical significance are important because they provide objective criteria to a result of research. They are designed to calculate the effects of chance in the results of an experimental treatment and are only as meaningful as the variables accompanying the research are controlled. Hypothesis testing does not consider the practical importance of the results: This must be accomplished by careful examination of the data in other ways.

In this study involving so many uncontrolled variables, any consistent measurable change of attitude of musical preference toward the style encountered in the treatment, negative or positive, especially with this age-group, is an indication that change has happened: The subjects were affected, although in this research, only to a small extent.

Many scores reflected a negative shift from the pre-test to the post-test. This phenomenon can only be surmised. The immediate school and/or home environmental conditions might explain in part the negative responses. This includes the emotional effects of the 9-11 tragedy, stressful peer or home relationships, family financial pressures brought on by a failing economy, the upcoming FCAT sessions, and perhaps stresses or anxiety brought on by the every-day pressures of the school year. These are the real life conditions over which research has little or no control. Additionally, this negativity may represent an example of peer or social affect (Hargreaves and North 1997)(Martindale 1988), or it may be a matter of redundancy or complexity (Berlyn 1974), or cultural predispositions (Gans 1974). Research by Greer et al. (1974), although involving active rather than passive listening, concluded that when students are forced to listen to music that they initially did not like, they tend to develop a greater dislike rather than an increased liking.

On the other hand, the changes in preference either way, in spite of lacking statistical significance, could be the result of learning due to the experimental treatment, background music.

The third research question investigates the nature of the responses to each of the listening examples, comparing the experimental group to the control group, as well as comparing the treatment examples to the destractor examples. It is interesting to note that in this research, whether or not there was a change in preference regardless of its direction, there is a very close relationship between what a student objectively indicated he or she liked and the level of preference they designated after hearing each music example.

In this study the only style of music which was rated in a positive manner was R&B (rhythm and blues): Seventy percent of all participants indicated a mean rating of 5.8. Traditional rock and roll rated only 3.0, but this was expected because black music is very popular with the youth of all ethnicities. It is emotional, deals with contemporary issues, and frequently has a cross-cultural message. As previously mentioned, this result concurs with research by McCrary (1993) and Morrison (1998). White students are far more apt to show a preference for black music(R&B) than the black population for white music.

All other examples, both classical/concert and popular, were rated no higher than 3.5 on the 7-point Likert scale. All participants were instructed in detail with regard to what each level represented. The instructions included that selecting a '3' implied that like a '4', they may feel neutral towards the example, however, they probably would not select to listen to it voluntarily. Research by LeBlanc et al. (1996) and Byrnes (1997) affirmed the fact that the lowest level of preference for most music except rock and rock (this includes R and B in their study) appears to occur during the late elementary and middle school years.

This study indicates that with regards the styles encountered in the experimental treatment, the students were consistent with their attitudes toward concert music. Of the concert music examples, the Mozart and Haydn excerpts were scored the highest by control and experimental groups in the pre-test and post-test. The Haydn example is extracted from the Surprise Symphony, 2nd Movement including the famous sforzando.

The students felt considerable humor in it and responded most favorably. This relatively strong positive response by children to what is perceived as a humorous moment is consistent with the research of LeBlanc et al. (1992). Those three musical examples also reflected the greatest preference shift, albeit small, in both directions.

The fourth research question involves examining the common characteristics of those participants in the experimental groups who exhibited a positive change. Results of this research show a modest difference between the experimental group participants and the control group participants with regard to those who made a positive shift and those who made a negative shift (Tables 4-10 and 4-11). With regard to a positive shift, the mean-score changes of both the fifth-grade with above average family income Caucasians and sixth-grade lower income non-Caucasians shifted positive sufficiently to attain statistical significance. The fifth-grade change is predictable because possessing obvious material belongings, and being the senior members of the student body as well as a part of the ethnic majority, they would probably feel confident and comfortable promoting their opinions in some manner, negative or positive. Also, it would seem reasonable that in the new social-educational middle school environment, the sixth-grade non-Caucasians from lower-level income families whose opinions were previously overshadowed by the fifth-grade "in-group"would now act emancipated. They feel more comfortable expressing their personal opinions in a more overt manner, a way acceptable in their new middle school social position. Sharing their opinions has become more important to them.

The final research question concerns comparing the scores of each of the experimental groups, identifying and comparing the characteristics of groups exhibiting the greatest positive and negative change and identifying the characteristics of the teachers and learning situations associated with those groups.

Although all groups were fairly equal, all groups responded uniquely to the treatment as indicated in Appendix K (Table K-1). Each set of group responses appears to be dependent not only on the individuals, but also on the physical attributes of the classroom, attitudes toward school in general, relationships between other individual class members, and the attitudes projected by the teacher. An examination of the more interesting positively and negatively responding groups (Tables 4-11 and 4-12) indicated no major definitive characteristics within each group that could act as a constant predictor of a negative or positive score change.

Occasionally some of the experimental group teachers mixed in other musical styles from other CDs. The act of integrating examples of other musical styles (ethnic music) into the program may be a significant issue regarding the overall success toward changing preference toward any one style.

In conclusion, although the main results of this research were not statistically significant, there seem to be results that are at a better than chance level: The levels of significance may not have reached the traditional .05, but certainly were low enough to speculate that there may be some advantages to the program of passive listening beyond the extra-musical benefits as reported by the instructors. Although many groups shifted negative, the fact that one entire middle school showed a positive gain in attitude towards the experimental treatment raises several questions:

1. Would there be similar results with other musical examples?
2. Would the results also increase with a different treatment period?

3. Is it the positive and healthy attitude of the school that makes students ready to respond positively to this particular mode of treatment? Would the 7th and 8th grade groups from the same school, therefore, react similarly?
4. Is it the strong parental commitment (Parents will sign a contract) to their child's education that helps to forge the child's attitude to one which is ready for learning?

In addition, three other schools had groups that also scored in a positive direction. Including middle school #6, all had been training and experience in Kagan techniques of cooperative learning and all used the recommended background music ("New Age" with specific tempi for various activities). Most, however, used other additional music including light pop, familiar (to the teacher) classics, and easy listening. Also, many of the students' previous teachers used background music under similar conditions. It appears that if a student has a proper attitude for learning, and the teacher has a healthy attitude toward teaching, the use of passive listening may alter preference. The more passive exposure a student has to music that is not necessarily theirs by choice but familiar enough and within their intellectual reach, the greater chance it seems there is that they may learn to enjoy that style.

Middle School #6, where all groups, both experimental and control, shifted their preferences in a positive direction, is a school of choice and is one with extreme parental involvement. The typical characteristics of all teachers of groups exhibiting a positive preference change defines one who is commanding, nurturing, will disciplined, cheerful, innovative, and positive in basic attitude.

Finally, because this study involves human subjects and natural conditions, uncontrolled variables are inevitable and can distort the results. Because of the student assent script, all participants knew that something beyond the ordinary was involved. The "Hawthorne Effect" (reaction by the control group) could have influenced the control group to respond as they did. The students do talk to each other because they have other classes together. This effect occurs when the control group believes that there is a competition. They end up performing beyond their norm. If the experimental treatment had been subliminal or near subliminal, that is, below conscious perception, this effect might not have been an issue. Because the teachers were very enthusiastic about the calming effects of the music, it is very possible that the music probably was played too loudly. Perhaps more specific teacher training might have helped avoid the situation..

Recommendations.

Future research on the topic of passive listening should consider the following changes on the methodology.

1. Use a longer treatment period.
2. Start with all CDs in the teachers' possession from the start rather than passing them out one per month during the project.
3. Integrate other enjoyable yet appropriate music with the treatment CD's during the treatment period. It seems that several teachers did this with positive results.
4. Perhaps include on each CD several of the same examples found on the pre-test/post-test . This study involved only musical style rather than individual pieces. It would be interesting to compare the results of repeated passive exposure to individual pieces as well as similar styles.
5. In addition to occasionally visiting the instructors, maintain a higher level of communication with them using more frequent short appropriate encouraging letters, notes or e- mails at least once per month.
6. Conduct the study using two similar schools, one control and the other experimental, using the background music. This type of study could be best accomplished in a small stable community where a student would remain in the same school for at least three or four years. Ideally the system would be a K-8 or K-9 where a student would not feel the psychological trauma of moving from the top of a small school to the bottom of a large school, the stresses associated with the onset of puberty, or where ethnic differences are an issue.

Testing could involve two or three15-minute sessions over a period of at least one school year.

7. A different approach in methodology might be to have several teachers each teach certain classes with and certain classes without the use of background music. This method would help control a potential Prestige Effect as well as the effect of teacher personality on results.

APPENDIX

APPENDIX A
PRE/POST SURVEY (DDS)

Name ______________________

Circlethe *number* that applies. Student #______ (I assign)

1. School:
   1. Denison Middle School
   2. Boone Middle School
   3. Eagle Lake Elementary
   4. Snively Elementary
   5. Lake Shipp Elementary
   6. Jewett Middle School (Academy)

5. Homeroom:
   01. 07.
   02. 08.
   03. 09.
   04. 10.
   05. 11.
   06. 12.

Personal Profile. Circle the correct number under each item

2. Gender
   1. Female
   2. Male

3. Age (*As of Today*)
   1. 10 Yrs old or less
   2. 11 Yrs old
   3. 12 Yrs old or more

4. Your present grade

   1. 6th grade

   2. 5th grade

6. Ethnicity (*Teachers will assist*)
   1. African American
   2. Asian
   3. Caucasian
   4. Hispanic
   5. Native American
   6. Multiracial

17. Academic Level (gen.)
    .Not printed on student survey
    Teacher responded to this question

25. Receives Free or Reduced Lunch
    Not printed on student survey.
    Lunch Room Coordinator responded.

Musical Profile Circle the correct number

7. Can you play a piano?
   1. YES
   2. NO

8. Can you play a guitar?
    1. YES
    2. NO

9. Are you a member of the band?
    1. YES
    2. NO
10. Are you a member of the orchestra (violin, viola, cello, bass viol)?
    1. YES
    2. NO

11. Do you sing in a SCHOOL choir?
    1. YES
    2. NO

12. Do you sing/play in a CHURCH group?
    1. YES
    2. NO

13. Do you play hand bells in a school or church group?
    1. YES
    2. NO

14. Do you take private music lessons? (Piano; guitar; instrumental - wind, string, percussion; vocal)
    1. YES
    2. NO

15. What kind of music do you most like to listen to?
    1. Classical
    2. Country
    3. Popular (Rock & Roll, Rap, Techno, Alternative, Metal, R & B)
    4. Latino (salsa, etc.)
    5. Other (?) ________________

16. What kind of music do you enjoy next to the most?
    1. Classical
    2. Country
    3. Popular (Rock & Roll, Rap, Techno, Alternative, Metal, R & B)
    4. Latino (salsa, etc.)
    5. Other (?) __________________

18. What kind of music does your family like most to listen to?
    1. Classical
    2. Country
    3. Popular (Rock & Roll, Rap, Techno, Alternative, Metal, R & B)
    4. Latino (salsa, etc.) 5. Other (?) ______________

You do various activities in your music classes and at home. Please rate these specific activities according to your liking for them.

Circle the number on each scale which applies..

19. Performing on instruments.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

20. Singing songs.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

21. Listening to music.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

22. Studying music composers and history.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

23. Composing/writing music.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

24. Dancing/Movement to music.

1.	2.	3.	4.	5.	6.	7.
Don't Like at all !	–	-	Neutral Ho - Hum	+	++	Love It !!

APPENDIX B
MUSIC PREFERENCE SURVEY EXAMPLE

Student Name____________________

Student # (I will Assign)____________ Homeroom Teacher________________

Dislike--Like

26. Ex.1.

1	2	3	4	5	6	7
Do Not Like It At All !	- -	-	Neutral	+	++	Really Like It !

27. Ex.2.

1	2	3	4	5	6	7
Do Not Like It At All !	- -	-	Neutral	+	++	Really Like It !

37. Ex.12.

1	2	3	4	5	6	7
Do Not Like It At All !	- -	-	Neutral	+	++	Really Like It !

Practice Examples

Ex.A.

1	2	3	4	5	6	7
Do Not Like It At All !	- -	-	Neutral	+	++	Really Like It !

Ex. B., Ex. C likewise.

APPENDIX C
TEACHER EXIT QUESTIONNAIRE

Name________________________
School_______________________
Project Leader_________________

Please sign and complete this instrument and return it to the designated project leader at your school.

The following statements include a 7- point Likert scale and space at the end for individual remarks.

1	2	3	4	5	6	7
Very Strongly Dissagree	SD	D	Neutral	A	SA	Very Strongly Agree

Please read each statement carefully.
Several are similar in meaning, but carry a different emphasis.

1. The approximate number of minutes per week that your students (research participants) were exposed to the passive listening. Please be as exact in your approximation as possible.

____

Circle appropriate response

	VSD	SD	D	N	A	SA	VSA
2. The use of this quiet background passive listening in my classroom caused a calming effect amongst the students.	1	2	3	4	5	6	7
3. The use of quiet background passive listening in my classroom was a distraction to the students.	1	2	3	4	5	6	7
4. I experienced no difference in student behavior throughout this project.	1	2	3	4	5	6	7

	VSD	SD	D	N	A	SA	VSA
5. I found the use of the music distracting to me while teaching.	1	2	3	4	5	6	7
6. I found the music distracting to me while grading papers or conferring with students	1	2	3	4	5	6	7
7. I felt that the music had a calming effect on me.	1	2	3	4	5	6	7
8. My attitude toward classic style music improved throughout the project.	1	2	3	4	5	6	7
9. The use of the passive background music during study or quiet time helped the students to center or focus on what they needed to do.	1	2	3	4	5	6	7
10. The students displayed a pointed interest in the music being played by asking specific questions regarding the music: (What is it? Who wrote it?)	1	2	3	4	5	6	7
11. Occasionally the students reacted in some physical way to the background music (toe tapping, wiggling in time, "directing").	1	2	3	4	5	6	7
12. When the music was eliminated, the students inquired about Its absence.	1	2	3	4	5	6	7
13. At first the background music was distracting to me; however, I became accustomed to it over time and grew to like it.	1	2	3	4	5	6	7
14. At first the background music was distracting to me; however, I became accustomed to it over time though never really enjoyed it.	1	2	3	4	5	6	7
15. The background music was distracting to me from day one. I never really became comfortable with it.	1	2	3	4	5	6	7
16. I do not really like this type of classical music - it holds no interest to me.	1	2	3	4	5	6	7
17. I love this type of classical music and enjoy sharing it with my students.	1	2	3	4	5	6	7
18. Other instructors have indicated to me a desire to use this classical style music in their classrooms.	1	2	3	4	5	6	7
19. Some believe that exposing students to classical music encourages higher order thinking skills (critical thinking). This effect seemed evident in my class -(although not measurable at this time).	1	2	3	4	5	6	7

	VSD	SD	D	N	A	SA	VSA
20. Some believe that exposing students to classical music encourages higher order thinking skills (critical thinking), but this effect was not evident in my class.	1	2	3	4	5	6	7
21. I believe that exposing students to classical music makes no difference in any regard whatsoever.	1	2	3	4	5	6	7
22. In so far as I am able to determine, most students I know receive little exposure to music of substance, of high artistic quality.	1	2	3	4	5	6	7
23. I believe that this project has merit with relation to the previous (22) statement.	1	2	3	4	5	6	7
24. Given the opportunity and know-how, I would consider integrating music (as a passive activity) into my teaching to a greater extent than I have up to now.	1	2	3	4	5	6	7

Future Research and Comments

1. What questions, concerns, thoughts or ideas regarding this project would you like to share?

2. Do you think that this particular application of passive music listening enhanced the students' basic attitudes toward their academic life in your class? If so, how so?

APPENDIX D
LISTENING EXAMPLES

Table D-1. Pre- and post-test listening examples.

Example	Source	Piece	Composer	Style	Tempo (mm)	Key	Meter	Seg. time
1	Radio	Luckenbach, Texas	W. Jennings	Country	110	G Maj	Duple	30 sec.
2	Music Listening Wadsworth/Hoffer 507960	Symphony #40 1st movement	Mozart	18th Century Classic style	120	G min	Duple	36 sec.
3	Radio	Be Alone	Aliyah	Rhythm & Blues	60	A min	Duple	33 sec.
4	Listener's Guide Dallin (072707)	Rite of Spring Part 1	Stravinsky	20th Century Atonal style	110	None	Duple	35 sec.
5	Norton Recording Sony (AR 3391)	West Side Story "Tonight"	Bernstein	Broadway	120	C Maj	Duple	35 sec.
6	Pilz 160-183	Divertimento KV137 3rd movt.	Mozart	18th Century Classic style	60	Bb Maj	Duple	35 sec.
7	Radio	Black Dog	L. Zeppelin	Classic Rock	130	A min	Duple	35 sec.
8	Pilz 44 9014-2	Symphony #99 2nd movt.	Haydn	18th Century Classic style	75	C Maj	Duple	35 sec.
9	Personal tape	Lullaby of Birdland	Shearing	Big Band Jazz	120	F min	Duple	35 sec.
10	Point Classic 265069-2	Concerto for two Violins 1st movmt.	J. S. Bach	Baroque	75	Db Maj	Duple	35 sec.

Example	Source	Piece	Composer	Style	Tempo (mm)	Key	Meter	Seg. time
11	Laser Light 15 284	Alma Llanera	Traditional	Mexican Folk	130	C Maj	Comp.	35 sec.
12	Point Classic 2 65076-2	Symphony #6 in Bm 2nd Movement	Tchaikovsky	Romantic Period	120	D Maj	In 5	35 sec.
13	Radio	Party Up (acceptable vers.)	DMZ	Rap	115	Eb min	Duple	38 sec.

Table D-2. Class listening CD-1 (of four).

Track #	Source	Composer	Title/Movement	Tempo (mm)	Meter	Seg. Time	Total Time
1	Point Classic	Mozart	Symphony 25, KV 183				
	265055-2		2nd Movement	90	Duple	6m	6m
			3rd Movement	150	Triple	3m	9m
			4th Movement	110	Duple	7m	16m
2	Platinum	Handel	Water Music #2 in D				
	CLG7028		Allegro	115	Duple	2m13s	18m13s
			Hornpipe	120	Triple	5m	23m13s
3	Denon	CPE Bach	Sinfonia #3 in C Maj/3rd Mvmnt.	132	Duple	5m29s	28m42s
	CO-73 326		Sinfonia #4 in A Maj/2nd Mvmnt.	75	Triple	3m	31m42s
			Sinfonia #5 in B Maj/1st Mvmnt.	120	Duple	4m	35m42s
4	Music Digital	Vivaldi	Concerto in Dm for Oboe, Stg, Org.				
	31-004		Allegro	120	Triple	2m40s	38m22s
			Largo	90	Duple	2m35s	40m57s
			Allegro	130	Duple	2m45s	43m42s
			Concerto for 2 Trumpets				
			Allegro	120	Duple	1m	44m42s
5	Pilz	Haydn	Konzert #5 for King Ferdinand				
	44-9014-2		Andante	110	Triple	6m20s	51m02s
			Finale	130	Duple	4m	55m02s
6	Point Classic	JS Bach	Concerto for 2 Violins in Dm				
	265069-2		Vivace	120	Duple	4m	59m02s
			Largo	90	Triple	7m12s	66m14s
			Allegro	120	Triple	3m10s	69m24s
7	Point Classic	Mozart	Piano Concerto #21 in C Maj				
	265093-2		Allegro	120		4m	73m24s
			Maestoso	75		1m	74m24s

Table D-3. Listening CD-2 (of four).

Track #	Source	Composer	Title/Mvmnt	Tempo (mm)	Meter	Seg. time	Total time
1	Laser light	Mozart	Flute Concerto in Gm, K313				
	14-037		Allegro	120	Duple	8m44s	8m44s
			Adagio	60	Duple	9m41s	18m25s
2	Pilz	Haydn	Divertimento #1 in Bb Maj				
	160-119		Minuetto	140	Triple	2m	20m25s
			Rondo	144	Duple	1m50s	22m15s
3	Point Classic	J.S. Bach	Concerto for Harpsichord #1 in Dm				
	267-005-2		Allegro	120	Duple	8m18s	30m33s
4	Personal tape	Tarrega	Guitar Etude #2 in Em	70	Triple	2m30s	33m03s
5	Personal tape	J.C. Bach	Sinfonia Opus #9, No. 2 in Cm				
			Andante	60	Duple	3m37s	36m40s
			Allegro	115	Triple	4m30s	41m10s
6	Laser Light	Vivaldi	Flute Concerto #3 in				
	14-094		Largo	40	Compound	3m24s	44m34s
			Allegro	120	Triple	1m33s	46m7s
7	Point Classic	J.S. Bach	Concerto for Hjarpsichord #1 in Dm				
	267-005-2		Allegro	75	Triple	8m43s	54m50s
8	Music Digital	Vivaldi	Concerto Grosso in E Maj (Spring)				
	31-004		Allegro	126	Duple	3m35s	58m25s
			Lento	50	Triple	2m23	60m48s
			Compound	110	Compound	4m24s	65m12s
9	Personal tape	J.C. Bach	Sinfonia, Opus 18, #2 in Bb Maj				
			Lento	50	Compound	6m	71m12s

Table D-4. Listening CD #3 (of four).

Track #	Source	Composer	Title/Mvmnt	Tempo (mm)	Meter	Seg. time	Total time
1	Platinum Disc NL 959	Corelli	Concerto Opus 8 Allegro	120	Duple	2m58s	2m58s
2	Platinum Disc NL 959	Corelli	Concerto Opus 8 Allegro, Largo	115	Duple	5m45s	8m43s
3	Wadsworth/Hoffer 507960	Handel	Messiah–Halleluja Chorus	110	Duple	2m39s	11m22s
4	Platinum Disc 01642-1	Tchaikovsky	Nutcracker Suite–March	125	Duple	2m45s	14m7s
5	Platinum Disc 01642-1	Tchaikovsky	Nutcracker–Scene 7	Varied	Triple	4m8s	18m15s
6	Platinum Disc 01642-1	Tchaikovsky	Nutcracker–Scene 8	60	Duple	3m50s	22m5s
7	Reprise 9 26665-2	Traditional (Take 6)	Silent Night	90	Compound	2m	24m5s
8	Sony A028792	Handel	Messiah–Sinfonia	75/100	Duple	3m54s	27m59s
9	Sony A028792	Handel	Messiah–Lift Up Your Heads	80	Duple	3m8s	31m7s
10	Sony A028792	Traditional	Pat–a–Pan	110	Duple	2m29s	33m36s
11	Sony A028792	Tchaikovsky	Nutcracker Suite Overture	110	Duple	3m9s	36m45s

Track #	Source	Composer	Title/Mvmnt	Tempo (mm)	Meter	Seg. time	Total time
12	Sony A028792	Tchaikovsky	Nutcracker Suite Dance of The Sugar Plum	60	Duple	3m17s	40m2m
13	Am Gram–1988	Traditional	Lo 'Ere A Rose	80	Duple	2m47s	42m49s
14	Platinum Disc NL959	Locatelli	Christmas Concerto in F				
			Vivace	120	Duple	1m36s	44m25
			Andante	100	Triple	1m43s	46m8s
15	Platinum Disc 01642-1	Tchaikovsky	Swan Lake–Dance	75	Duple	2m49s	48m57s
16	Am Gram–1988	Traditional	Hark! The Herald Trumpets	100	Duple	1m23s	50m20s
17	Am Gram–1988	Traditional	Hark! The Herald Angels Sing	Varied	Duple	2m27s	52m47s
18	Sony A028792	J.S. Bach	Bist Du Bei Mir	55	Triple	3m40s	56m27s
19	Am Gram–1988	Traditional	The Holly and the Ivy	90	Duple	2m58s	59m25s
20	Sony A028792	J.S. Bach	March in D	110	Duple	1m	60m25s
21	Platinum Disc 01642-1	Tchaikovsky	Nutcracker Suite Dance of the Flute	115	Duple	2m5s	62m30s
22	Am Gram 1988	Traditional	Bring A Torch	50	Compound	2m32s	63m2s
23	Personal Tape	J.C. Bach	Sinfonia in Cm–Andante	60	Duple	2m30s	65m32s
24	Am Gram–1988	Traditional	Silent Night	Varied	Triple	5m5s	70m37s

Table D-5. Listening CD #4 (of four).

Track #	Source	Composer	Title/Mvmnt	Tempo (mm)	Meter	Seg. time	Total time
1	Point Classic 265091-2	Mozart	Symphony #40				
			3rd Movement	160	Triple	3m42s	3m42s
2	Arte Nova 10521177	Purcell	Suite from Fairy Queen				
			Allegro	130	Triple	2m30s	6m12s
			Allegro	178	Duple	2m32s	8m44s
3	Point Classic 265 055-2	Mozart	Bassoon Concerto, K 191				
			1st Movement	115	Duple	7m47s	16m16s
4	Laser light 10500167	J.S. Bach	Overture #1			6m42s	22m58s
			Courant	130	Duple		
			Gavotte I, II	75	Duple		
			Forlane	80	Triple		
5	Point Classic 265091-2	Mozart	Symphony #40				
			4th Movement	120	Duple	6m47s	29m45s
6	Music Digital 31-004	Vivaldi	Seasons (Concerto Grosso in F Maj)				
			1st Movement	115	Duple	5m20s	35m5s
7	Platinum CLG 7035	Boccherini	Cello Concerto, Op. 34				
			1st Movement	126	Duple	4m	39m5s
8	Music Digital 31-004	Vivaldi	Seasons (Concerto Grosso in F Maj)				
			3rd Movement	100	Triple	3m33s	42m38s
9	Point Classic 265091-2	Mozart	Symphony #41				
			3rd Movement	150	Triple	4m40s	47m18s
			4th Movement	170	Duple	2m30s	49m48s

Track #	Source	Composer	Title/Mvmnt	Tempo (mm)	Meter	Seg. time	Total time
10	Telarc 80200	Beethoven	Symphony #1 1st Movement (into dev..)	70	Duple	7m2s	56m50s
11	Telarc 80200	Beethoven	Symphony #6 1st Movement (into dev.)	120	Duple	7m	63m50s
12	London 425-614	Stravinsky	Pulcinella Suite Overture/Seranada	100	Duple	2m47s	66m37s
13	London 425-614	Stravinsky	Pulcinella Suite Overture/Scherzino/Allegro	115	Varied	7m4s	73m41s

APPENDIX E
FIRST MEETING TEACHER LETTER

PROJECT

The Effect of Passive Listening on Musical Preference
PhD. Dissertation, University of Florida
Experimental Study
R. S. Custer

I. History

My interest in musical - psychological phenomenon was catalyzed by my studies with Dr. Russell Robinson and subsequent readings of research by David Boyle, Rudolph Radocy, Clifford Madsen, Bennett Reimer, David Elliot, Robert Zajonc, David Hargreaves, Ruth Britten, and Al LeBlanc. I've always wondered how we could maneuver those early teenage minds to be more accepting of what we call art/concert music - classical music - developmental music. At the same time, as I became aware of the National Standards in 1994 and reflected back to when I taught 5th and 6th grade general music in the 70s, I wondered just how in the world can we even come close to reaching the ideals of the Standards on a diet of 40 minutes of music per week. My conclusion was and is simply that it would be real nice if we had some help. For example, my wife, Judi, teaches the Alpha students (among other stuff) at Brigham Academy. Sometimes she plays art music (instrumental - classic/baroque) in the academic background. At first little was said, but after several weeks some of the students began asking for one piece or another (Vivaldi was big). This was encouraging.

II. Past Research

Research by Darrow and Randall in the late 70s and early 80s indicates that students in elementary school gain an intense interest in the popular styles as they move up in grade level. I feel that this is to be expected (the poetry connects, the media exports broadly). However, there also tended to be a resistance to or a growing opposition to music which requires a high order of thinking to understand or to gain an aesthetic experience.

Research by Zajonc revealed that familiarity with a visual impression resulted in a higher level of acceptance by the observer. Behavioral research indicates that for the most part we enjoy that which we understand or with which we have experience.

Background music research shows that our behaviors are modified somewhat by the music which we HEAR. Winn Dixie - (Recker Highway) plays Baroque Music selections during many hours each day - I wondered why ???

Presently, there is a flurry of research involving the Mozart Effect. This is basically the idea that listening to well structured music will create higher- thinking- order patterns which when followed by a test of some manner will inspire the listener to use similar thought schemas to solve problems or simply answer logic questions. ......? All the research that I've seen had too many population biases (most of the students were real smart to begin with).

III. Project.

I want to show the effects of passive listening (background music - musical brainwashing - whatever you want to call it) on the students' musical preference. This will be about a 4 month project. My hunch (hypothesis) is that because we will increase their familiarity with the sound - harmonies, rhythms, structural issues (tonality)(overall form) - they will be more receptive to eventual active listening because, due to familiarity, they just might LIKE what they are hearing and will respond more actively to our questions (hence a higher order thinking pattern).

My wife's students are required to be intellectually strong. However, I want this project to involve *all* levels of intellectuality. It would be neat to compare the results by grade level, gender, musical background, ethnicity, type of class such as ESE/ EH students compared to mainstream, etc. It could be stratified, but that could lead to research bias - like the Mozart Research. There are a lot of neat ways to approach this project, but the bottom line is DO-ABILITY - It must be do-able ! I would like the results of this research to be generalizable and I want to limit the scope so that I may be able to attain a .05 level of significance (95% of the time the change of preference is due to the intervention - not other things[uncontrolled variables]). I will design this research more specifically in the coming weeks. Your ideas are welcomed. Please E-Mail me at (Rcuster@mail.polk.cc.fl.us). I will IMMEDIATELY respond and discuss either by internet or by phone. All thoughts are confidential.

IV. Music Educator Participation

1. Assist me when necessary in the testing of the experimental group (both pre and post). It is uncertain as to the nature of the test and how it will happen. But your time expense will be minimal.
2. Keep the teachers on track ! Stay in contact with the classroom teachers involved in the study. Encourage them to meet the time requirements of the study.
3. This involves very little if any in-class time. Any time spent in the project outside the school day may be compensated.
4. I am sure there is more, but I really can't imagine what at this point.

V. Classroom Teacher Participation

1. Play the appropriate background music (there will be CDs or tapes) at the agreed-upon times or for the agreed-upon amount of time per day.

VI. In General

1. There really is NO down side to this study. Everyone wins. The teachers *may* have the opportunity to hear wonderful music, experience a better level of class discipline (research indicates......), maybe attain higher levels of class test results (research indicates...). The students *may* develop a higher level of musical acceptability, a higher level of musical taste. The principals *may* benefit by having a happier school which may translate to higher scores on those wonderful norm-referenced evaluations......

2. What's the worst possible case?: Nothing changes, I (hopefully) finish the degree, and the sun rises in the morning again.

3. Please consider being a part of this project. Hopefully everyone would like to ! The reality is that probably only a few schools can be selected - as a control group or as an experimental group. The groups will be tested for equality. If you have a strong interest in this project,

please fill out the return slip at bottom and mail back in the attached return envelope. I will consider these schools first.

****

Please return by Next Tuesday August 10th

1. Name____________________________ 3. No. of students in your class_______

2. School___________________________ 4. Phone #___________

E-Mail__________________

APPENDIX F
PARENTAL CONSENT EXEMPTION REQUEST

Dr. Levy,

I apologize for not contacting IRB previous to this time. The committee and I had no idea that for a project of this nature we needed the approval of the review board. The school of music rarely conducts research requiring human contact such as this, so we were unaware of the requirement. I really should have and could have investigated the protocol procedures far sooner. Actually it is Dr. Randy Penfield, a recent (one week ago) replacement on my committee from the Ed. Psych. Department who brought it to my attention. He assumed that I had obtained the proper permissions. Before I left to return to Winter Haven I immediately visited with the IRB office secretary who clued me into the exact procedure as she attempted to relieve me of considerable anxiety.

I have read the criteria for exemption from the informed consent process and am requesting to be exempt for the following reasons:

1. Impracticality. This study involves about 800 elementary and middle school students. It will put an additional burden on the already overburdened teachers to have to pass out and collect the informed consent documents. This alone will take a long time.

2. Nature of subject matter. This study only involves how a student feels about music in his or her life and what they think about 12 selections of classical music before and after they are subjected to it passively. This study does not pose a threat to sensitivity or personal issues. It is basically a double survey seeking to indicate a change of some sort.

3. Compromise the research. I do not like the word, DECEPTION. However, if I inform the parents of the project, many will probably state their opinion firmly and loudly to their child about the values of music, which in turn may taint the child's response. If the students are aware of the project a peer effect may take place. In both cases the child's responses will be affected.

4. Timeliness. This is *not* one of the criteria for exemption, but I would like to relate a sense of urgency. I am in a definite time-crunch. I have only till December of 2002 to complete the degree. This means I must have data collected by January so that we can analyze and complete the dissertation by June for submission. For various reasons, it has taken me since 1995 to get my "ducks in a row" - study the subject matter and understand the underlying psychological principles involved - chair the music area at Polk Community College - raise a family – etc. I cannot think of any other graceful ways of shrouding procrastination.

I would be glad to come up and meet with you immediately to discuss the project further if necessary, and am grateful for your consideration of these circumstances.

Best regards,
Robert S. Custer

APPENDIX G
PARENTAL CONSENT

Dear parent/Guardian,

I am Mr. Bob Custer, graduate student in the Department of Music at the University of Florida. I am also the Coordinator of Music at Polk Community College here in Winter Haven. At this time I am conducting a research project involving the effects of background listening on musical liking. The purpose of this project is to determine if background music can affect a student's attitude or liking toward a specific style of music, classical/concert in this case. The study will last about 14 weeks. The results of this study could offer our teachers yet another terrific reason to use music in the classroom. I would like your permission to ask your child to voluntarily join in on this activity.

The method is quite simple and very similar to what may already be happening.

1. There will be two designated groups. All students in fifth and sixth grade will be assigned to one group or the other.
2. The first group will hear soft background classical music as they enter and leave the classroom. If the teacher feels comfortable, he or she may also play it very softly during certain appropriate in-class times or activities.
3. The other group will have no music.
4. There will be a short survey - about 25 minutes - at the beginning of the project. All students will be asked what they think about what they hear. After a couple of months, there will be another short listening survey - about 12 minutes.

Although the students will be asked to write their names on the survey for matching purposes, their identity will be kept confidential. We will replace their names with code numbers. The results will be reported as group data. Participation or non-participation in this study will not affect the children's grades or placement in any programs. If you do not wish your son or daughter to participate in the survey, they will simply sit quietly, listen, and enjoy the pretty music without filling out the music form. Furthermore, there are no known risks involved to the students and there is no compensation offered to the students for participation. Results of this study will be available by April upon request. If you have any further questions about this project, please call me at 297-1010 ext. 5277. You may also call my committee chairman, Dr. Charles Hoffer, Chairman of Music Education, University of Florida at (352) 392-0223. Questions or concerns about your child's rights as a research participant may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, Fl. 32611, phone (352) 392-0433.

Robert S. Custer

I have read the procedure described above. I voluntarily give my consent for my child_____________________________to participate in Robert Custer's music liking study.

Parent/Guardian Date

Please Sign

APPENDIX H
STUDENT ASSENT SCRIPT

Read to all classes

Good morning students. I'm Mr. Bob Custer. Some of you know me from the Kids at College program we hold at Polk Community College during summer vacation. I also attend the University of Florida and it is in that capacity that we are together today. I'm doing a little music project which will last about 14 weeks and I need your opinions. Of course this is completely voluntary—you do not have to participate if you don't want — but I hope you do. And you will not receive a grade. We are going to answer some easy and fun questions on the answer sheet then listen to several examples of music. Should take about 30 minutes. After each short example you will simply write your opinion on the sheet - we'll do it together. Remember, this is voluntary. If you don't feel like participating, just sit quietly and listen to the pretty music. You will not need to fill out the music form. Now, is everyone OK with this? Does anyone wish not to participate? *Hesitate and acknowledge.* OK. Let's begin.

APPENDIX I
VERBAL CLASS INSTRUCTIONS

Verbal instructions were short and included addressing the following issues as necessary:

1. Seats are to be straight and in rows - not clustered.

2. All materials are off of desks except a pencil.

3. Keep eyes on own Answer Sheet - Do not look at neighbor for any reaction - I really want your own opinion - NOT the opinion you believe your neighbor would like you to voice. Your personal opinion is the most important - and it should be kept to yourself.

4. The CD will announce each example, there will be about a 5 second pause then the music will begin. Wait till I tell you to mark your answer sheet, then do so quickly. If you make a mistake simply cross it out clearly and circle your preferred answer.

5. I put a 7-point Likert Scale on the board and briefly explained each increment with an appropriate example. Importance of the inner numbers was emphasized as students were reminded that there is usually just one most or least of anything, the rest being of some other value. The inner numbers could represent that which they might or might not choose to listen to due to their preference for it. The purpose for these comments was to help avoid a possible eventual regression to the mean.

6. If an air conditioner was noisily running, I asked that it be turned off during the listening.

7. I reiterated the importance of keeping eyes on own paper, being still, keeping eyes on own paper, and waiting for the go-ahead for marking their score for each example.

APPENDIX J
PRE-TEST AND POST-TEST DISTRACTOR STATISTICS FOR EXP. GROUPS

Table J-1. Pre-test score as a percentage at each preference level* (n=354) and statistics.

Item Number	1	2	3	4	5	6	7	M	Sd
# 1—Country	52	19	10	8	5	2	4	2.1	1.6
# 3—R & B	2	2	3	7	12	22	52	5.9	1.4
# 5—Theater	57	20	9	8	3	2	1	1.8	1.2
#7—R & R	28	17	14	18	12	5	6	3.1	1.8
#9—Jazz	20	13	17	19	13	9	9	3.5	1.8
#11—Hispanic	28	9	13	19	13	9	9	3.4	1.9
Average	31.2	13.3	11.0	13.2	9.7	8.2	13.4	3.3	1.6

* Preference Level: 1 (Don't Like At All), 4 (Neutral), 7 (Really like it).

Table J-2. Post-test score as a percentage at each preference level and statistics.

Item Number	1	2	3	4	5	6	7	M	Sd
# 1	46	19	14	11	5	2	3	2.3	1.5
# 3	3	1	3	10	11	21	51	5.9	1.5
# 5	52	24	11	8	3	1	1	1.9	1.2
#7	27	18	14	17	10	8	6	3.1	1.8
# 9	17	14	11	23	14	15	6	3.7	1.8
#11	26	15	12	20	11	9	7	3.3	1.9
Average	28.8	15.0	11.0	14.8	9.0	9.3	12.3	3.4	1.62

APPENDIX K
RESULTS: NON-INTERACTION

Table K-1. Preference change in experimental groups.

Experimental group designation	Total group size	Pos. gain students	Even # group score change	Even # score change per student		Based on 42 pts		Odd # group score change
				[Mean	SD]	[Min	Max]	
1,1	17	8	-20	- 1.1	6.9	-17	9	- 32
1,2	23	15	91	3.9	7.5	-7	23	17
1,3	25	7	-35	- 1.4	6.5	-13	14	- 55
1,4	24	10	- 2	0	4.5	-9	7	12
1,5	17	4	-59	- 3.4	8.3	-23	12	- 12
2,2	12	2	-46	- 3.8	5.9	-15	3	- 27
2,3	16	1	-139	- 8.7	8.3	-25	4	- 97
2,4	15	6	-39	- 2.6	8.1	-17	9	0
2,8	19	9	-25	- 1.3	9.2	-27	12	- 16
3,1	21	6	-59	- 2.8	8.4	-18	20	6
3,3	13	5	-24	- 1.8	6.6	-14	12	- 19
4,1	14	5	-20	- 1.4	6.1	-13	7	- 1
4,2	19	11	44	2.3	7.7	-15	20	+5
4,3	15	4	-13	- .8	7.2	-12	17	33
5,3	14	7	10	.7	7.4	-13	13	18
5,4	14	4	- 29	- 3.5	12.3	-31	23	- 20
6,5	16	11	6	.4	7.8	-14	10	17
6,6	12	7	0	0	6.8	-9	14	13
6,7	20	12	34	1.7	5.6	-9	11	43
6,8	28	21	74	2.6	5.1	-10	15	41

1. Each student scored from 1 to 7 on 6 even (classical music) items and 6 odd (non-classical) items. The 6 even # scores of each student were summed and represent the individual preference score. The 6 odd # scores were summed and used as a comparison only (no statistical treatment).

2. The post-test preference score minus the pretest preference score equals each student score. The student scores were summed and equal the class/group score.

Table K-2. Teacher exit survey results.

Question	Response (%)			(N=18)				Mean	SD	Mode
	1	2	3	4	5	6	7			
1	Listening duration: Minimum: 30, Maximum: 255, Mean: 106.4, SD: 57.85. Sixteen week experimental treatment time is measured in minutes per week.									
2	0	0	6	0	67	17	10	5.3	.89	5
3	39	17	32	6	6	0	0	2.2	1.22	1
4	6	11	60	6	17	0	0	3.2	1.04	3
5	32	0	11	6	28	17	6	3.7	2.17	1
6	39	27	22	6	6	0	0	2.1	1.18	1
7	6	0	0	17	39	17	22	5.2	1.48	5
8	0	0	11	28	39	11	11	4.8	1.15	5
9	0	0	0	22	39	22	17	5.3	1.03	5
10	22	11	28	11	28	0	0	3.1	1.53	3
11	17	6	22	11	33	11	0	3.7	1.67	5
12	33	6	22	17	17	6	0	2.9	1.7	1
13	17	17	22	17	22	0	6	3.3	1.68	3
14	22	17	44	6	6	0	6	2.8	1.52	3
15	17	28	33	17	0	0	6	2.8	1.44	3
16	33	28	22	6	6	0	6	2.4	1.62	1
17	0	0	6	22	33	22	17	5.2	1.17	5
18	6	6	33	17	28	11	0	3.9	1.37	3
19	0	11	0	22	39	6	22	4.9	1.51	5
20	0	0	22	44	22	6	6	4.3	1.07	4
21	28	17	17	28	6	0	6	2.9	1.68	1
22	0	0	0	11	22	22	44	6.0	1.08	7
23	0	0	0	6	39	22	33	5.8	.99	5
24	0	0	6	11	33	28	22	5.5	1.15	5

NOTE: Likert Scale (1–Strongly disagree to 4–neutral(undecided) to 7–strongly agree)

Table K-3. Profile of gain students results.

		Experimental Group (155)			Control Group (136)		
	Classification [1]	N	%	Mean Gain	N	%	Mean gain
Gender	Male	72	46	5.6	69	51	6.6
	Female	83	54	5.7	67	49	6.4
Class	5th Grade	42	27	6.5	28	20	5.2
	6th Grade	113	73	5.4	108	80	6.8
Ethnicity	Caucasian	88	57	5.8	74	54	6.9
	Non-Caucasian	67	43	5.4	62	46	5.9
Scholastic level	Higher (A & B)	49	32	5.1	44	32	6.5
	Lower (C & less)	106	68	5.9	92	68	6.5
Economic status	Avg. or higher	96	62	5.4	67	49	7.2
	Lower than avg.	59	38	6.2	69	51	5.8
Musical experience	Pub. school—Yes	114	74	5.4	79	58	6.8
	Pub. school—No	41	26	6.6	57	42	6.0
Musical listening preference	Classical	1	1	2.0	0	—	—
	Rock	133	85	5.5	112	82	6.5
	Other[2]	21	14	7.2	24	18	6.4
Home listening influence:	Classical	14	9	4.0	6	4	7.2
	Rock	69	45	5.7	65	48	6.3
	Other[2]	72	46	5.9	65	48	6.6

[1] This is a group of 291 students (both experimental and control groups) who exhibited a positive change in their scores from pre-test to post-test.

[2] Jazz, Gospel, Country

Table K-4. Results of TES response comparison of four most positive-group and four most negative-group teachers.

TES Question	Neg. group Ave. Response Level	Pos. group Ave. Response Level	Difference in Response Level	Agreement Level All Teachers
2	5.50	5.50	0.00	93% Agree
3	2.00	2.25	+0.25	22% Agree
4	3.75	3.00	-0.75	21% Agree
5	3.25	4.00	+0.75	50% Agree
6	1.50	2.25	+0.75	22% Agree
7	5.50	5.75	+0.25	93% Agree
8	5.25	5.00	-0.25	60% Agree
9	5.75	4.50	+0.50	78% Agree
10	3.25	4.50	+1.25	40% Agree
11	3.25	4.50	+1.25	40% Agree
14	2.25	3.75	+1.50	15% Agree
15	2.25	3.75	+1.50	25% Agree
16	2.50	3.75	+1.25	15% Agree
17	5.25	5.00	-0.25	72% Agree
18	3.50	3.25	-0.25	NA
21	3.00	4.25	+1.25	11% Agree
22	5.75	5.75	0.00	88% Agree
23	6.00	5.50	-0.50	94% Agree
24	6.00	5.75	-.250	83% Agree
Average overall	3.90	4.40	+.50	————

1. Based on Likert scale: '1' (Strongly Disagree) to '7' (Strongly Agree)
2. Results of the teacher exit survey expressed as an average of responses by teachers representing the 4 most negative and 4 most positive experimental groups and their difference. Also the overall level (%) of Aggreance with each question.
3. See Appendix C for specific questions. Questions 12, 13, 19, and 20 omitted due to ambiguity.

APPENDIX L
EFFECTS RESULTS (F SCORE) OF SELECT GROUPS

Table L-1. Results (F test) of main effect on all research participants (n=661).

	Pre-test to post-test means change.		Within-effect of score means difference.		Interaction of score change and exp/cnt. grps.		Between exp. and cont. groups effect.	
Variable related to score	N	M	F	p	F	p	F	p
Exper/Contr — Main effect	661	- .9	F (1, 659) = 3.430	p = .06	.352	.55	1.656	.19
Exp/ Con—Males	309	- .3	F (1, 307) = .211	p = .64	1.040	.30	.001	.98
Exp/Con—Females	352	- .9	F (1, 350) = 4.250	p = .04	.009	.92	2.990	.08
E/C—Caucasian	345	- .3	F (1, 343) = .094	p = .75	.700	.40	.994	.31
E/C—Non Caucasian	316	- 1.1	F(1, 314) = 6.060	p = .01	.001	.97	.647	.42
E/C —African American	121	- 1.1	F(1, 119) = 3.320	p = .07	.057	.81	.060	.80
E/C —Hispanics	127	- 1.2	F(1, 125) = 2.590	p = .10	.024	.87	2.930	.08
E/C —Economic indicator Avg. or +	335	- .02	F(1, 333) = .012	p = .91	.893	.91	.398	.52
Below avg.	326	- 1.2	F(1, 324) = 7.200	p = .01	.020	.88	.749	.38
E/C—High grades—A & B	230	- 2.0	F(1, 228) = 4.900	p = .02	.207	.65	4.190	.04
E/C—Low grades—C, D, F	431	- .2	F(1, 429) = .440	p = .50	.113	.73	.146	.70
E/C—Musical exp.—Band	136	- .5	F(1, 134) = .560	p = .45	.760	.38	1.460	.22
E/C—Musical exp.—Choir	292	.1	F(1, 290) = .132	p = .76	.473	.49	.560	.44
E/C—Musical exp.—Orch	90	- .3	F(1, 88) = .167	p = .68	1.380	.24	.001	.99
E/C—No mus. ensemble exp.	264	- 1.4	F(1, 262)= 7.347	p = .01	.580	.45	.063	.80

Table L-2. Selected effects results of all fifth grade participants (n=169).

Variable related to score	Pre-test to post-test means change. N	M	Within-effect of score means difference. F	p	Interaction of score change and exp/cnt.grps. F	p	Between exper. and cont. groups effect. F	p
Exper./Contr.16—Main effect	169	- .8	F(1, 167) = 1.120	.29	.21	.64	.306	.58
Exp/ Con—Males	81	- 1.3	F(1, 79) = 2.000	.16	.001	.94	.918	.34
Exp/Con—Females	88	- .3	F(1, 86) = .016	.90	.43	.51	.016	.89
E/C —Caucasian	88	- 1.0	F(1, 86) = .481	.49	3.33	.07	1.165	.28
E/C —Non Caucasian	81	-.5	F(1, 79) = 1.980	.16	2.97	.08	.121	.72
E/C—African American	29	- 1.7	F(1, 27) = 3.200	.08	.51	.47	.002	.96
E/C —Hispanics	29	- .7	F(1, 27) = .857	.36	2.08	.16	.057	.81
E/C— Economic indicator Avg. or +	60	- 1.3	F(1, 58) = .108	.74	4.49	.03	.003	.95
Below avg.	109	- .5	F(1, 107) = 1.140	.28	1.68	.19	.341	.56
E/C - High grades—A & B	65	- 1.8	F(1, 63) = 3.300	.07	.35	.55	.073	.78
E/C - Low grades—C, D, F	104	- .2	F(1, 102) = .007	.93	1.08	.30	.237	.62
E/C - Musical exper.—Band	8	- 4.0	F(1, 6) = .046	.83	.04	.83	.481	.51
E/C - Musical exper.—Choir	78	- .7	F(1, 76) = .278	.60	.43	.51	.573	.45
E/C - Musical exper.—Orch	17	- .5	F(1, 15) = .380	.54	.44	.51	.461	.50

Table L-3. Selected effects results of all sixth-grade participants (n=492).

	Pre-test to post-test means change.		Within-effect of score means difference.			Interaction of score change and exp/cnt. grps.		Between exper. and cont. groups effect.	
Variable related to score	N	M		F	p	F	p	F	p
Exper./Contr.6th Grd—Main effect	492	- .50	F(1, 490) =	2.14	.14	.129	.72	1.10	.29
Exp/ Con—Males	228	.20	F(1, 226) =	.08	.77	.981	.32	.33	.56
Exp/Con—Females	264	- 1.10	F(1, 262) =	4.80	.02	.132	.71	3.40	.06
E/C—Caucasian	257	.10	F(1, 255) =	.04	.84	.055	.81	.22	.64
E/C—Non Caucasian	235	- 1.20	F(1, 233) =	6.15	.01	.934	.33	.97	.32
E/C—African American	92	- .90	F(1, 90) =	1.49	.22	.001	.99	.11	.74
E/C—Hispanics	98	- 1.50	F(1, 96) =	3.37	.06	1.170	.28	3 .16	.07
E/C—Economic indicator Avg. or +	275	- .08	F(1, 273) =	.28	.59	.024	.87	.28	.59
Below avg.	217	- 1.50	F(1, 215) =	8.50	.01	1.620	.20	.34	.56
E/C—High grades—A & B	165	- 1.00	F(1, 163) =	2.44	.12	.650	.42	4.10	.04
E/C—Low grades—C, D, F	327	- .30	F(1, 327) =	.41	.51	.026	.87	.04	.84
E/C—Musical exp.—Band	128	- .50	F(1, 126) =	.40	.53	.936	.33	.98	.32
E/C—Musical exp.—Choir	214	.40	F(1, 212) =	.71	.40	.057	.81	.02	.89
E/C—Musical exp.—Orch	53	- .60	F(1, 51) =	.02	.88	.840	.36	1.06	.30

Table L-4. Selected results of all male participants (n=309).

Variable related to score	Pre-test to post-test means change. N	M	Within-effects of score means difference. F	p	Interaction of score change and exp/cnt. grps. F	p	Between exper. and cont. groups effects. F	p
Exper./Contr.—General effect	309	- .3	F(1, 307) = .211	.64	1.040	.30	.001	.98
E/C—Caucasian	176	- .5	F(1, 174) = .556	.45	.661	.41	.411	.52
E/C—Non Caucasian	133	.1	F(1, 131) = .051	.82	.417	.52	.527	.46
E/C—African American	50	.1	F(1, 48) = .035	.85	.159	.69	1.380	.24
E/C—Hispanics	56	.5	F(1, 154) = .205	.65	.001	.97	.055	.81
E/C—Economic indicator Avg. or +	163	.3	F(1, 161) = .375	.54	.969	.32	.062	.80
Below avg.	146	- .9	F(1, 144) = 1.540	.21	.384	.53	.226	.63
E/C—High grades—A & B	122	-1.2	F(1, 120) = 2.420	.12	.493	.48	.208	.64
E/C—Low grades—C, D, F	187	.3	F(1, 185) = .413	.51	.396	.53	.208	.64
E/C—Musical exp.—Band	74	.1	F(1, 72) = .045	.83	.461	.49	.856	.35
E/C—Musical exp.—Choir	109	- .02	F(1, 107) = .010	.92	1.884	.17	.018	.89
E/C—Musical exp.—Orch	34	- 1.1	F(1, 32) = .698	.41	.336	.56	1.770	.19

Table L-5. Selected effects results of all female participants. (n=352).

Variable related to score	Pre-test to post-test means change.		Within-effect of score means difference.		Interaction of score change and exp/cnt. grps.		Between exper. and cont. groups effect.	
	N	M	F	p	F	p	F	p
Exper./Contr.—General effect	352	- .9	F(1, 350) = 4.25	.04	.009	.92	2.99	.09
E/C—Caucasian	169	.2	F(1, 167) = .10	.75	.145	.70	4.07	.04
E/C—Non Caucasian	183	- 1.9	F(1, 181) = 10.70	.001	.137	.71	.18	.67
E/C—African American	71	- 1.9	F(1, 69) = 5.06	.02	.104	.74	.58	.44
E/C—Hispanics	71	- 2.6	F(1, 69) = 6.30	.01	.000	.99	3.80	.05
E/C—Economic indicator Avg. or +	172	- .3	F(1, 170) = .16	.69	.158	.69	.38	.54
Below avg.	180	- 1.5	F(1, 178) = 6.10	.01	.129	.72	2.50	.11
E/C—High grades—A & B	108	- 1.2	F(1, 106) = 2.33	.13	.002	.96	3.90	.05
E/C—Low grades—C, D, F	244	- .8	F(1, 242) = 2.07	.15	.009	.92	.79	.37
E/C—Musical exp.—Band	62	- 1.5	F(1, 60) = 1.51	.22	.243	.62	.48	.49
E/C—Musical exp.—Choir	183	.2	F(1, 181) = .12	.72	.036	.85	.94	.33
E/C—Musical exp.—Orch	56	.2	F(1, 54) = .01	.93	1.050	.30	1.18	.28

Table L-6. Selected effect results of participants with no school ensemble experience (n=264).

Variable related to score	Pre-test to post-test means change.		Within-effect of score means difference.		Interaction of score change and exp/cnt. grps.		Between exper. and cont. groups effect.	
	N	M	F	p	F	p	F	p
Exper./Contr.—Main effect	264	- 1.4	F(1, 162) = 7.34	.01	.58	.45	.063	.80
Exp/ Con—Males	143	- .6	F(1, 141) = .65	.42	.35	.55	.088	.76
Exp/Con—Females	121	- 2.3	F(1, 119) = 9.72	.002	.44	.51	.480	.49
E/C—Caucasian	109	- 1.2	F(1, 107) = 1.72	.18	.25	.61	.085	.77
E/C—Non Caucasian	155	- 1.5	F(1, 153) = 6.20	.01	.32	.56	.335	.56
E/C—African American	52	- 2.6	F(1, 50) = 11.30	.09	1.11	.29	.197	.65
E/C—Hispanics	78	- 1.2	F(1, 76) = 1.36	.24	.01	.94	.296	.58
E/C—Economic indicator Avg. or +	98	- .5	F(1, 96) = .20	.65	.44	.50	.017	.89
Below avg.	166	- 1.9	F(1, 164) = 10.20	.002	.35	.55	.074	.78
E/C—High grades - A & B	102	- 1.7	F(1, 100) = 4.53	.03	1.78	.18	.209	.64
E/C—Low grades - C, D, F	162	- 1.1	F(1, 160) = 2.74	.09	.03	.86	.470	.49

Table L-7. Selected effects results of those with school ensemble experience (n=397).

Variable related to score	Pre-test to post-test means change. N	M	Within-effect of score means difference. F	p	Interaction of score change and exp/cnt. grps. F	p	Between exper. and cont. groups effect. F	p
Exper./Contr—General effect	397	- .10	F(1, 395) = .023	.87	.102	.75	1.03	.31
Exp/ Con—Males	166	.02	F(1, 164) = .026	.87	.785	.37	.001	.97
Exp/Con—Females	231	- .20	F(1, 229) = .106	.74	.096	.75	1.77	.18
E/C—Caucasian	236	.30	F(1, 234) = .402	.52	.624	.43	1.24	.26
E/C—Non Caucasian	161	- .60	F(1, 159) = 1.140	.28	.251	.61	.06	.80
E/C—African American	69	.06	F(1, 67) = .000	.99	.794	.37	.01	.83
E/C— Hispanics	49	- 1.30	F(1, 47) = 1.160	.28	.023	.88	2.45	.12
E/C—Economic indicator Avg. or +	237	.10	F(1, 235) = .210	.64	.504	.47	.46	.49
Below avg.	16	- .40	F(1, 158) = .467	.49	.055	.81	.43	.51
E/C—High grades—A & B	128	- .70	F(1, 126) = 1.270	.26	.364	.54	3.21	.01
E/C—Low grades—C, D, F	269	.20	F(1, 267) = .284	.59	.547	.46	.13	.68

Table L-8. Comparison between 5th grade and 6th grades experimental groups. (Score * effect)[a]

Effect	All (N=354)		Fifth Grade (N=110)		Sixth Grade (N=244)	
Score * Gender	F(1, 352) = .05	p = .82	F(1, 108) = .15	p = .70	F(242) = .38	p = .56
Score * Musical experience	F(1, 352) = 3.46	p = .06	F(1, 108) = .24	p = .62	F(242) = 3.77	p = .05
Score * Economic indicator	F(1, 352) = 1.10	p = .29	F(1, 108) = 4.09	p = .05	F(242) = 7.48	p = .01
Score * Ethnicity	F(1, 352) = .52	p = .52	F(1, 108) = 3.06	p = .08	F(242) = 4.20	p = .04
Score * Grade achievement	F(1, 352) = 1.40	p = .22	F(1, 108) = .12	p = .73	F(242) = 1.50	p = .21

[a] Score(pre to post) is within-factor, each variable is the between-factor.

APPENDIX M
REQUEST FOR DISTRICT APPROVAL

From: Robert S. Custer

To: Dr. Robert W. Helmick
Assistant Superintendent
Instructional Services Division
Polk County Schools
P.O. Box 3091
Bartow, Fl 33831

Subj.: Letter of Endorsement

Dr. Helmick,

I am presently a doctoral candidate at the University of Florida working toward a PhD. in Music Education. I have only my dissertation to accomplish. In this regard I would like very much to do a study involving Polk County schools. The enclosed project proposal will explain it. I have consulted with Frank Howes on several occasions and he is in complete support of the project. I have spoken with principals at the following schools and they have consented to be a part of the project pending district approval. The middle school principals have yet to clear it with the 6th grade teachers, but apparently see no problems at this moment.

Eagle Lake Elementary Ella Mae Adams, Principal	Lake Ship Elementary Dr. Sally Childs, Principal	Snively Elementary B-Annie Lewis, Principal
Denison Middle Linda Williams, Principal	Westwood Middle Carolyn Williams, Principal	

If the nature of this study were to change focus and involve other/additional schools, I would seek similar approval as I have up to this time.

Would you please grant me a letter of endorsement for the project. I really believe that it is a culturally valuable experience for everyone involved.

Thank you for your consideration.
Sincerely, Robert S. Custer

APPENDIX N
IRB PROTOCOL FORM

This was signed by the appropriate faculty and forwarded to IRB

1. TITLE OF PROTOCOL:

The Effect of Passive Listening on Liking of Classical Music

2. PRINCIPAL INVESTIGATOR(s): (Name, degree, title, dept., address, phone #, E- mail & fax)

Robert S. Custer
PhD Candidate in Music Education
UFL Music Department
2841 S. Lake Deer Drive, Winter Haven, Florida, 33880
863-299-3669 (home)
Rcuster@Tampabay.rr.com
FAX: Polk Community College: 863-297-1037

3. SUPERVISOR (IF PI IS STUDENT): (Name, campus address, phone #, e-mail & fax)

Dr. Charles Hoffer, Music Education Chairman
UFL Music Department
352-392-0223 (main office)
352-372-1456 (home)
Hoffer@Mindspring.com

4. DATES OF PROPOSED PROTOCOL:

From 17 Sept 2001 To 14 Dec 2001

5. SOURCE OF FUNDING FOR THE PROTOCOL:
(As indicated to the Office of Research, Technology and Graduate Education)
NONE

6. SCIENTIFIC PURPOSE OF THE INVESTIGATION:
To determine whether or not this mode of listening (passive) is effective in

changing liking for classical music. If so, this can be great asset for the teaching community, especially when concerning world musics.

7. DESCRIBE THE RESEARCH METHODOLOGY IN NON-TECHNICAL LANGUAGE. The UFIRB needs to know what will be done with or to the research participant(s).

This research is done under normal or naturalistic conditions. Other than a pretest and posttest, absolutely nothing will be done with or to the research participants that is not already occurring. They will simply be hearing music as they enter and leave their classroom. The only difference is that one group will have the opportunity to hear only classical music; whereas, the other (control) group will hear whatever the teacher wishes EXCEPT classical music. The teachers may also use music as they normally do at certain times during the class period as they deem appropriate. The only requirement is that the classical music group be exposed to at least 90 minutes per week. There will be a bi-weekly time chart, which I will collect from each teacher of the classical music groups. The pre and posttests will be kept with the teacher. Anonymity is assured as each student will be assigned a code number. There are two sections: a student profile and a likert rating scale of liking for 12 examples of music, 6 of which are classical examples. I have prepared the pre -posttest CD which contains 30 seconds of 12 different examples. The entire pretest should take about 35 minutes. I have also prepared the main exposure CDs which contain about 75 examples of various incomplete symphonic movements, 5 to 8 minutes each. All musical materials will be destroyed at the conclusion of the study.

8. POTENTIAL BENEFITS AND ANTICIPATED RISK. (If risk of physical, psychological or economic harm may be involved, describe the steps taken to protect participant.)

There are no risks in any way, not even minimal. The benefits of the procedure are debatable: Research has been done which suggests that class discipline is positively affected with the use of calming classical music. The Mozart effect, the enhancement of spatial and mathematical-logical reasoning through the use of hearing Mozart, has been suggested. Most importantly, however, is that research has suggested that there is a correlation between familiarity and liking; however, that research has been done primarily with active and directed listening. This research is applying it passively which could indicate that learning can occur without a direct focus. If so, the research will propose that music could be effectively taught outside the music classroom. This could assist the music teacher who already has insufficient time to teach all that is required. It would be terrific if the students came to the music class already familiar and maybe even enjoying the music about to be actively studied.

9. DESCRIBE HOW PARTICIPANT(S) WILL BE RECRUITED, THE NUMBER AND AGE OF THE PARTICIPANTS, AND PROPOSED COMPENSATION (if any):

Three elementary schools and two middle schools in Polk County have already consented to be a part of this study. The Superintendent of Instruction, Mrs. Elizabeth Miles has given official approval for the study, as has the principals of the five schools and the teachers involved.

There will be approximately 800 students involved: 450 6th grade middle school students ages about 11 or 12, and 350 elementary school students ages about 10-11.

There is NO compensation.

10. DESCRIBE THE INFORMED CONSENT PROCESS. INCLUDE A COPY OF THE INFORMED CONSENT DOCUMENT (if applicable.).

- IRB for non-medical projects (IRB-02)
  Contact: C. Michael Levy, PhD, Chair
  Voice: (352) 392-0433
  Fax: 392-9234
  e-mail: irb2@ufl.edu

Please use attachments sparingly.

____

Principal Investigator's Signature

____

Supervisor's Signature

I approve this protocol for submission to the UFIRB:

____

Dept. Chair/Center Director Date

APPENDIX O
MUSICAL EXPERIENCE ANALYSIS

Chart and assessment of musical experience

Level	Group	Band	Orchestra	Chorus	Guitar	Handbells	Piano	Church Music	Total Points
5th Grade	Experimental	2	28	53	27	24	32	30	196
	Control	6	9	25	14	15	13	22	104
6th Grade	Experimental	74	19	112	46	37	95	81	464
	Control	54	34	102	45	38	108	74	455
				Summation					
All Students	Experimental	76	47	165	73	61	127	111	660
	Control	60	43	127	59	53	121	96	559
Total Musical Experiences		136	90	292	132	114	248	207	1219

Each musical activity-experience is awarded 1 point.

The experimental group has an average of 8% advantage in musical experience over the control group.

The 6th grade experimental group has 40% greater musical experience level beyond the 5th grade experimental group.

APPENDIX P
STUDENT AND FAMILY LISTENING PREFERENCES

Student and family listening preferences (self report) by number and percent

Grade/Family group	participants	Various musical styles				
		classical	country	pop—rock	Latino	other*
5th grade preferences	169	4 (2%)	15 (9%)	132 (78%)	4 (2%)	14 (9%)
6th grade preferences	492	10 (2%)	20 (4%)	407 (82%)	21 (4%)	34 (8%)
			Summation			
Total student (661)	661	14 (2%)	35 (5%)	539 (82%)	25 (3%)	48 (8%)
Family preferences	661	49 (7%)	125 (19%)	321 (49%)	74 (11%)	92 (14%)

* Other styles include jazz, gospel, contemporary Christian, easy listening, other ethnic.

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BIOGRAPHICAL SKETCH

It is definitely austere earning one's doctorate at age 62. It was equally austere being a guy born in the Woman's Hospital in Philadelphia, but that's the way it happened. My family was completely business oriented—Stock Brokers, Insurance Brokers, Bankers, Realtors—and I was extremely science oriented, replete with a photography lab, chemistry lab and electronics lab at one time or another. This is perhaps why—aside from blowing-up our garage—I eventually pursued the music education profession: No family member was offended, and music was easy, fun, and satisfying. They did, however, lay bets as to which family member would be first to be asked for financial aid.

In 1964 I earned a Bachelor of Arts degree from Lycoming College, majoring in music and mathematics. I then fooled the family by joining the Navy, and serving in the Philippines during the Vietnam era. In 1967 my wife and I were married and eventually raised two children (rather, they raised us).

In 1969 after I earned my Master of Arts for Teachers (MAT) at Colorado State University, I taught in Jackson, Wyoming, the "real" skiing capitol of our country. We remained there until 1975, at which time we moved to Salt Lake City and the University of Utah. My objective was to study the choral techniques of Dr. Bernell Hales; therefore, I formally commenced practicing my doctoral studies. Unfortunately, I had too much fun teaching, singing, directing church choirs, becoming a Realtor, wilderness camp director, distance runner, karate instructor, as well as ski chaperone and life guard at the local YMCA.

In 1984 we came to Florida. I taught mathematics at Lake Wales High School for two years and then obtained a position at Polk Community College where I have taught music and coordinated the music program since. In 1992 I got fired-up to rekindle my doctoral program at the University of Florida. The rest, as they say, is history. Who knows what lies next (Dublin marathon?)!

I certify that I have read this document and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Charles R. Hoffer

Charles R. Hoffer
Professor of Music

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This dissertation was submitted to the Graduate Faculty of the College of Fine Arts and to the graduate school and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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